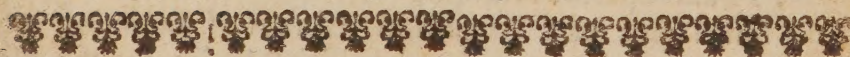




H O R N E's
INTRODUCTION
TO THE
Art of Chirurgery.



BOOKS printed for JOHN OSBORN and
THOMAS LONGMAN.

I. **A** New Method of CHEMISTRY; including the Theory and Practice of that Art : Laid down on Mechanical Principles, and accommodated to the Uses of Life. The whole making a clear and rational System of Chemical Philosophy. To which is prefix'd, a critical History of Chemistry and Chemists, from the Origin of the Art to the present time. Written by the very learned *H. Boerhaave*, Professor of Chemistry, in the University of *Leyden*, and Member of the Royal Academy of Sciences at *Paris*. Translated by *P. Shaw*, M. D. and *E. Chambers*, Gent.

II. A new Practice of Physic ; wherein the various Diseases incident to the human Body are orderly described, their Causes assign'd, their Diagnostics and Prognostics enumerated, and the Regimen proper in each delivered. The whole form'd on the Model of *Dr. Sydenham*, and completing the Design of his *Processus Integri*. The Second Edition. In Two Volumes. By *Peter Shaw*. M. D. 8vo.

III. The Philosophical Works of the Honourable *Robert Boyle*, Esq; Abridg'd, Methodiz'd, and Dispos'd under the general Heads of Physics, Statics, Pneumatics, Natural History, Chemistry and Medicine. By *P. Shaw*, M. D. in Three Volumes, 4to.

IV. A Mechanical Account of Fevers. By *Laurentius Bellini*, M. D. and Professor of Physick in the University of *Pisa*. Done into English, with a large Explanatory Introduction, 8vo.

V. Philosophical Principles of Universal Chemistry, or the foundation of a Scientifical manner of Inquiring into, and preparing the natural and artificial Bodys for the use of Life, both in the Smaller way of Experiment and the Larger way of Business. Design'd as a general Introduction to the Knowledge and Practice of artificial Philosophy or genuine Chemistry, in all its Branches. Drawn from the *Collegium Jenense* of *Dr. George Ernest Stahl*, by *Peter Shaw*, M. D.

VI. Philosophical Principles of Medicine. In three Parts. The Second Edition with Additions. By *Thomas Morgagni*, M. D.

15662
MICRO-TECHNE;

O R, A

Methodical Introduction

TO THE

Art of Chirurgery :

In which every Branch thereof is handled in a most Natural, Compendious and Perspicuous Manner ; and constant References are made, under each Head, to the Best Authors who have treated on that Subject more largely.

Together with a CRITIQUE on the most Eminent Writers in the Art.

Written in *Latin* by

JOHANNES VAN HORNE, Professor of Anatomy and Chirurgery in the University of *Leyden*.

Translated with Additions,
By HENRY BANYER, Surgeon.

Quam quisque novit Artem, in ea se exerceat. Tull.

L O N D O N :

Printed for JOHN OSBORN and THOMAS LONGMAN, in *Pater-noster-Row* ; and FRANCIS FAYRAM at the *Royal Exchange*. M,DCC,XXX.

MICROTECHNE

Art of Chirurgery.





T H E

P R E F A C E.



I would be needless to say any thing here in Commendation of the Art of Healing, for its Usefulness; since every

body, one time or another, has been afflicted with Sickness, and consequently cannot but have a just Value for an Art, whose Province it is to recover the greatest of Blessings, Health. Nor does it yield in Antiquity to any other Art or Science: for, as Celsus says, There was never any Place without Physick; since the most unciviliz'd Nations had the Use of Herbs and

other familiar Remedies for Wounds and Diseases. *As Hunger oblig'd Men, in the beginning, to follow Agriculture, to find out wherewithal to satisfy its Cravings; so the many Disorders that must necessarily happen in their Bodies, put 'em early upon seeking out Remedies, from the Art of Medicine.*

THE Human Body is a very curious Machine, consisting of Parts extremely fine and delicate, which are both fluid and solid; and the mutual and uninterrupted Action of one upon the other, is what constitutes Life and Health. The latter, by their Contraction and Dilatation, give motion to the former, and keep them from stagnating and putrifying; whilst they furnish what is subtle and active enough to continue and preserve to the solid Parts their Energy and Vigour. By these means the Circle of the Humours is kept up, and the Nervous System is always replete with a very fine Substance, by
whose

The Preface.

V

whose Mediation the Mind is able to move the Body at pleasure ; and likewise thereby, thro the Avenues of the Senses, are let into it all the Stores of Knowledg and Science it is able to attain to, during its Abode here.

BUT since the CREATOR of this wonderful Fabrick design'd its Duration to be but short, having made it of such Materials as are apt to decay, standing in need of continual Reparation ; and at length to be so worn out by its constant Action, as to be altogether unfit to perform its proper Offices : it is impossible, but it must meet with many Impediments from every thing that surrounds it. The finer and more delicate the Parts are, whereof it is compos'd, the more liable is it to be put out of order. And tho in the first Ages of the World, before Luxury in some, and Study and Contemplation in others, had weaken'd their Bodies, Men may be suppos'd to have not been so subject to Diseases as at present ; yet they
A 3 *could*

could not then always prevent their Bodies from being wounded or bruised by what was sharp or hard; therefore that part of Medicine, which is call'd CHIRURGERY, is the most antient.

THIS was very much improv'd by Æsculapius, as his Name, which, in the Phænician Language, signifies a Man of the Knife, demonstrates; and seems to have been brought to Perfection by Hippocrates, as appears from his immortal Writings. Many Distempers, judg'd incurable now, were not so heretofore. The Antients made use of more efficacious Remedies than we: 'Caute- rizing was very familiar to them; People not having then such an Horror and Aversion to it. The Scythian Nomades caused themselves to be burnt in the Shoulders, Arms, Breast, Thighs and Loins, to render their Bodies and Joints more lusty and strong, in order to draw their Bows, and launch their Javelines.

1 Prosp. Alpinus de Med. Ægypt. lib. 3. c. 12.

The Preface.

vii

IF these Means seem too cruel, they had others more gentle. The Use of Musick was very antient in Physick. Homer mentions the stopping Ulysses's Bleeding thereby. ² Pindar says, Æsculapius cured Ulcers, Wounds and Pains, by soothing Incantations, edulcorating Potions, Incisions, and external Applications: and ³ Galen reports the same of himself; quoting the Authority of Æsculapius for such Practice. Musick is used in Italy, at this day, for curing the Bite of the Tarantula: and tho ⁴ Cælius Aurelianus relates, how Soranus blamed the Vanity of such as pretended to sooth Pains by the means of Musick; yet I am persuaded something might be done that way. An intelligent and sober Person assur'd me, that when he was infected by the Plague at Lynn, he was for two Days and Nights in the most ex-

² Pythior. Od. 3. ³ De San. tuend. l. i. c. 8.

⁴ De Morb. acut. & chron. Amst. 1709. p. 555. ad finem.

quisite Torment, except whilst the Waits were playing under the Window of the Chamber where he lay, at which time he experienc'd the greatest Pleasure he had ever known in his Life, by an immediate Cessation of the Pain, till the Musick left off; and then it return'd again. ^s Several of the Moderns have attempted to account for the Effects of Musick on our Bodies; by supposing the Air to strike upon and shake the contractile Fibres of the Body, from the Vibrations made in it by the Musical Instrument.

I SHALL not here attempt an Account of the Progress of Chirurgery; since that has been in some measure done by our Author in his Introduction. However, it is worth being observ'd, That this Art, as it is more antient, so it has been less corrupted than the other Branches of Physick. It would be equally difficult and needless to enumerate the

^s See Mead of Poisons, p. 75.

very many different Hypotheses, which have been from time to time introduc'd, to the Detriment of the Art of Healing, ever since it has been join'd to the Study of Nature. These cannot but have had fatal Influences in the Administration of internal Remedies; when Chirurgery has receiv'd thereby no Detriment, since its Indications are taken from Causes that are certain and evident. Superstition likewise has not prov'd a little prejudicial to the Pharmaceutick Part of Medicine. This was very early in the hands of the Priests, who, to keep up their Esteem amongst the People, pretended that what they were able to effect this way, was owing to a supernal Power. ⁶ Iphyclus consulted Melampus, because he wanted Children; and was answer'd, after he had pretended to sleep in the Temple in order to consult the Deity, that he must sacrifice to Æsculapius, then stick the Knife he sacrific'd with, in an Oak; and, when it became rusty,

⁶ Apollodor. lib. 1.

The Preface.

*steep it in Wine, which drunk, would render his Wife fruitful. As this seems to be no improper Remedy, being nothing else than a Preparation of Steel, tho cover'd under this Disguise to beget the more Reverence; so many Medicaments were recommended by these means to the People, that were very pernicious. The Priests of Æsculapius at Epidaurus (where he was worshipped under the Form of a Dragon, and thence frequently call'd Draco Epidauri) and at Pergamus, were very dextrous in drawing in Bubbles by these Cheats; which were kept up till the Emperor Antoninus, as appears from a Marble Table, to be seen in the Palace of Maphæo, and whose Inscription is transcrib'd by Mercu-
 rialis. This Weakness of Mind has more or less Influence on Mankind, in proportion to their Ignorance. Hence came in all those ridiculous and vain Methods of pretending to cure by*

[De Arte Gymnastica, lib. I. c. I.

The Preface.

xi.

Charms, Amulets, &c. so frequent in use in the more barbarous Ages.

I AM sensible it may be here objected, against what I am saying in behalf of Surgery, in respect to its having continu'd pure and free from superstitious Trifles, That many things of that nature are to be found in Writers of no mean Repute in that Art; that so solid an Author as ^s Berengarius has given a Charm to be said in Wounds of the Head, tho it must be confess'd he does not allow much credit to it, any more than to the other Fooleries of the like sort, extant in Theodorick, and ^s others. But this is soon answer'd; for I take Chirurgery in the same sense with our Author, and think it ought not to be confounded with the other Parts of Physick, as was done by those Writers; whereby these idle Fancies got

^s De Fractura Cranii, p. 80. a. Ed. Venetiis, Anno 1535. ^s Ars Chirurgica apud Juntas, Venetiis 1546. & de Chirurgia, Scriptores Opt. per Gesnerum, Tiguri 1555.

The Preface.

admittance, at the same time the operative Part remain'd uncorrupted.

AND indeed we must acknowledg that Superstition was not admitted into the other Parts of Medicine, except by Priests, Empericks, or in the most dark and ignorant Ages; for real Physicians, to their Credit be it spoken, were of all Men the freest from this Weakness, so unworthy the human Nature. Hippocrates, the oldest Writer, in his Reasonings, Observations and Remedies, has not the least Tincture of this Folly; and in his Book of the Epilepsy, laughs at the vain and idle Ceremonies and Superstitions that were at that time used in order to cure that Disease. What he mentions as Divine in Distempers, cannot be of this kind; for many, not without Reason, believe with Galen, that he there means the Effects of the Air. This, by its different Gravities, at different times, its being impregnated with various heterogeneous Particles, and poison'd by
bale-

The Preface.

xiii

baleful Steams, that sometimes ascend from the Earth; cannot but have considerable Effects on our Bodies, and more especially when they are indispos'd. And a great Man has lately endeavour'd to account for the orderly Returns that happen in some Distempers, from the regular Alterations that are produc'd in the Atmosphere by the Celestial Bodies.

THIS most antient, useful and certain Branch of Physick, as it is exercis'd by a dextrous Use of the Hands; so it is only to be acquir'd by Practice and Observation. And this was the Method of Instruction in the Family of the Asclepiades, and is kept up in some measure to this day among the Surgeons; who before they attempt to practise, have been for the most part brought up under some Masters expert therein. However since they cannot learn every thing necessary in this Art from a Master, tho of the most extensive Business; and

¶ Mead de Imperio Solis ac Lunæ, &c.

they

The Preface.

they being apt to forget what they have observ'd, it is expedient they join Reading with their Practice. But in order to benefit thereby, they should chuse such Authors as have deliver'd their Precepts in a manner natural, clear and short; for to what purpose serves Prolixity here? they can't pretend to instruct the Ignorant, how tedious soever they are; and those that are regularly instituted, will be capable of improving, tho they use Brevity. Nor ought they to be burden'd with that tiresome uninstractive Theory which vulgar Books of Chirurgery abound with. Therefore I recommend to all Pupils in this Art, the Micro-Techne of Van Horne, as wanting nothing requisite for a Book on this Subject. The Method is natural and instructive, short but sufficiently clear to the Intelligent, and may serve as a Guide to such as want larger Instruction; for under each Head, he refers to the most celebrated Writers, that have treated on that Particular, after a more diffusive manner.

THE

THE Character the Author has acquir'd in the Republick of Letters, will speak better for the following Treatise, than any thing so obscure a Person as I shall be able to say. He was Professor of Anatomy and Chirurgery in the University of Leyden, which has for a long time been famous for producing Men eminent in this Art. He had improv'd the Instructions he receiv'd at home by Travel, and was for some time with the great Marcus Aurelius Severinus; at the Profoundness of whose Works, the illustrious Bartholine profess'd himself astonish'd. Nor does our Author want the Encomiums of the Learned: the celebrated ² Swammerdam confesses all his Skill in Anatomy he deriv'd from Van Horne. A late ³ Author, who wrote on purpose to instruct his Pupils in the Study of Medicine, speaking of the Writers in Chirurgery, has these words: Here

² Miraculum Naturæ, p. 93. ³ Schelhamer
Via regia ad Medicinam. Kiloni 1705. p. 123.

beyond Dispute, is to be prefer'd to all others, *Johannes van Horne*, who in his *Micro-Techne* has in an elegant Stile, and with the exactest Judgment, happily comprehended the whole *Art of Chirurgery* in a few Pages. *And below he adds, that it is as instructive as more and larger Volumes; but laments its being so rare and difficult to be got.*

AT the Conclusion of the following Treatise, the Author has been pleased to give a Character of some of the most eminent Writers in Surgery; in imitation whereof we shall endeavour to say something of such as have been publish'd since, and of some he has not mention'd, but with all due deference to better Judgments; for we profess our selves more ready to learn than instruct.

AMONG our English Writers, whereof he has taken no notice, occur Gale, who was the first here that observ'd

The Preface.

xvii

serv'd Gunshot Wounds were not venomous, contrary to the Opinion of Vigo and others; Banister, who translated Weckar, adding some Annotations of his own; Woodall, who so commended amputating a Limb in the mortify'd Part, and congratulates himself very much, for having frequently perform'd it after that manner with Success; Read, whose Chirurgical Lectures are extant, but not finished by him; and Wiseman, whose Works are well known, and the many Editions thereof sufficiently shew the kind Reception he was met with amongst his Countrymen. But these Writers, except Woodall in some of his Tracts, handle Surgery after a mix'd manner, saying little of the Operations. There has been lately translated out of High-Dutch the Chirurgia Curiosa of Purmannus, and embellish'd by the Translator with the Figures of Solingen; tho there are some Trifles in this Book, yet it contains many things worth Observation. At p. 210. he says he has
seen

seen try'd twice without Success, the manner of amputating according to Botallus, mention'd at p. 60. of the following Treatise.

SUCH as have only deliver'd the Operations, are, Nuck, the famous Anatomist; Charriere, whose Book is made up of the excellent Du Verney's Lectures, and publish'd contrary to his Mind; and Dionis: the last would be more useful, if he was less given to wander from his Subject.

THE Writers of Observations are Forestus, Petrus de Marchettis, Stampert vander Wiel, and Job Meckeren; the two last are translated out of Dutch into Latin. To these may be join'd that elaborate Treatise of Bonetus, which he calls Sepulcretum, seu Anat. Pract. on account of the Chirurgical Observations he there collects, which contain the Dissection of the Part affected; the best Edition of this Work is that publish'd by Mangetus at Geneva in 1700.

THOSE

THOSE that have wrote well on particular Parts of this Art, are Maiter Jan, who has treated very largely on the Diseases of the Eyes: Mauriceau, who in a compleat⁴ Treatise on that Subject, and in his Observations, has handled the Distempers of pregnant Women better than any before him, and seems to have left room for little Improvement to be made by others. Nor must we forget⁵ Belloste, who has, after Magatus and Septalius, shewn the great Abuse of Tents, and added a new manner of Exfoliation. In this Author are to be met with some curious Observations, shewing the Power of Diuretick Medicines in carrying off Matter collected in the Thorax. All these are in French, and of that Nation is Petit, who has wrote of the Diseases of the Bones. Among Writers

⁴ Traité des Maladies des Femmes Grosses, &c. 4 Ed. a Paris, 1694. ⁵ Le Chirurgien D'Hôpital, 2 Ed. a Paris, 1705.

The Preface.

of the Lues Venerea, besides such as have deliver'd a System of Surgery, a Collection of ⁶ Authors on that Subject publish'd at Venice in Two Tomes, are much esteem'd, by reason the Italians are thought to be very skilful in the Cure of this Disease, tho I cannot think so, from what I observ'd when I was in that Country. From De Blegni we may learn the French Method, who, by too liberal a use of Diureticks, frequently cause Caruncles. Musitanus is commended by many, and especially the French Translation, on account of the Notes added by the Translator. Of that stubborn Disease the King's-Evil, Andreas Laurentius has wrote well, tho his first Part is wholly taken up in a ridiculous Endeavour to prove the King of France able to cure it by Touching. The Writers of other Nations have been guilty of the like superstitious Folly with respect to this Distemper.

⁶ Scriptores de Morbo Gallico, Venetiis 1566.
& 1567.

The Preface.

XXI

AS to the following Translation, I leave it entirely to the Judgment of the Reader: I hope I have not missed the Author's Sense in many places; in some I have taken the liberty to make Additions; of which nature is §. 32. at p. 127. but have been careful to put 'em in a different Letter, and between two Brackets, that the Failings of the Translator might not be imputed to the Author.

ERRATA.

PAGE 4. line 8. dele Comma after *Saliceto*.
P. 20. l. 2. read *Durants* for *Duretus*. P.
23. l. 21. r. *Hemorrhoid*. P. 32. l. 20. r. *Lux-*
ation. P. 47. l. 18. r. *Conringius*. P. 83. l. 5.
for *lesser* read *better*. P. 104. l. 19. after *either*
add *for*. P. 135. l. 2. r. *Oedema*. P. 147. l.
penult. r. *Gluteus*. P. 158. l. 23. r. *arterial*.
P. 159. l. 1. r. *arterial*.



THE CONTENTS.

THE Introduction, concerning the Antiquity, Usefulness and Dignity of *Surgery*, p.1.

Se^t. 1.

CHIRURGERY, its Etymology and Definition, 13. *Surgeon*, his Description from *Celsus*, *ibid*. Of Operators so call'd, 15. Of Operations, 17. Of Place and Light, according to *Hippocrates*, *ibid*. Of Operations with Instruments, 18. Of Instruments, their Division according to their Matter, Form and Use, 19. Operations, their Division according to *Gourmelinus*, 23. *Fessenius* and *Vidus Vidius*, 24. According to the Author, 25. Of General Operations, 26. Of Exploration, *ibid*. Of Bandages, 28. Of Ligatures, 30. Of Compresses, 31. Of special Operations, and (1.) Of *Synthesis*, or a Conjunction of what is disjoin'd, 32. Of Fractures, *ibid*. Of Luxations, 36. Of Wounds and Ulcers, 39. Of Dislocation of the soft Parts, as Ruptures, &c. 43. (2.) Of *Diarexis*, or a Division

The Contents.

XXIII

vision of entire Parts, as those that are hard, 46. Of the soft Parts, 48. (3.) Of *Exarefis*, or an Extraction of noxious Substances sticking in our Bodies, such as are generated there, 51. as come from without, 53. (4.) *Apharefis*, or an Ablation of what's superfluous, which is either occultly, 55. or manifestly, 58. (5.) Of *Prosthesis*, or a supplying by Art what is deficient, 61. (6.) Of *Diorthosis*, or rectifying what is crooked, 62.

Sect. 1. Part 2.

Of Operations applicative of Medicines, 64. Of Natural Medicines, as Leeches, &c. 65. Of Artificial Medicines; as Injections, 68. Instillations, 69. Of Lotions, 70. Of Fomentations, *ibid.* Of Baths, *ibid.* Of Suffumigation, 71. Inunction, 72. Of solid Medicines; as Insersion of Powders, *ibid.* Intrusion of Suppositories, *ibid.* Applying Emplaisters, *ibid.* Application of Potential Cauteries, *ibid.*

Sect. 2. Part 1.

THE Order of the Operations, 73. Of an Issue in the Head, 74. Of the applying the Trepan, 75. Of *Hordeoli* in the Eyelids, 79. Of Couching a Cataract, 80. Of a *Fistula Lacrymalis*, 82. Of Squint-Eyes, 83. Of a *Polyphus*, 84. Of Hare-Lips, 85. Of a Cancerous Lip, 87. Of conveying Liquids into the Throat, 88. Of Tongue-ty'd Children, *ibid.* Of a relaxed *Uvula*, 89. Of the Excision of the Tonsils, 90. Of extraneous Bodies sticking in the Jaws, 91. Of noxious Bodies falling into the Ear, 92. Of Bronchotomy, *ibid.* Of a
Para-

Paracentesis in the *Thorax*, 94. Of extirpating Cancers, 98. Of a *Paracentesis* in the *Abdomen*, 100. Of Lithotomy, 103. Of extracting a Stone out of the *Urethra*, 111. Of an imperforated *Glans*, 114. Of Castration, 115. Of a *Hernia Aquosa*, 117. Of Hermaphrodites, 118. Of Impediments to Copulation, 119. Of the *Procidentia Uteri*, 120. Of the Extraction of a dead *Fœtus*, 121. Of the *Cæsarean Birth*, 122. Of an imperforated *Anus*, 126. Of a *Fistula in Ano*, 127. Of Setons and Issues, 120. Of Amputations of Limbs, 134. Of a *Spina Ventosa*, *ibid.* Of Uision of the Joints, 143. Of Tumours, 146. Of Venæsection, 149. Of Arteriotomy, 154. Of an Aneurism, 156. Of Infusion of Liquors, 158. Of Transfusion of Blood, *ibid.*

Sect. 2. Part 2.

Of Injections, 159. Of Instillations, 162. Of Fomentations, 163. Of Baths, 164. Of Suffumigations, 168. Of Unctions, 170. Of Powders, 172. Of Suppositories, *ibid.* Of Emplaisters, 174. The Conclusion, giving an Account of eminent Writers in Surgery, 176.



MICRO-TECHNE,

O R

A Methodical Introduction
to CHIRURGERY.

The Introduction.

§. 1.



S no Man shou'd
ever esteem him-
self a *Physician*,
who has not tho-
rowly acquir'd the
Knowledg of cu-

ring all curable Diseases in a human
Body; so in order to merit such a
Character, he ought to be well in-

B structed

An Introduction

structed in the several Branches of
 the Art of Healing, by whose assistance
 he must be enabled to exercise
 himself in the Profession of Physick.
 The Body of Man is subject to various
 Distempers, which, it is certain,
 are not alike dangerous to Life, nor
 of the same difficulty of Cure ; for,
 as *Celsus* says, *lib. 2. c. 3.* Some are
 removed by Rest and Abstinence, yet
 others there are, require more powerful
 Means : and as the same Author ob-
 serves, *lib. 2. c. 11.* An obstinate Dis-
 ease must always have a severe Remedy.
Hippocrates has well deliver'd down
 to us the distinct Offices in this Art,
Aph. 6. lib. 8. Whatever Disease, says
 he, Medicines will not cure, Incision
 may ; and if that fails, we must have
 recourse to Cauterizing. And this is
 that *Medicina efficax*, which, with
 a Hand, Herculean as it were, fur-
 nished with Instruments and Fire,
 cures the most stubborn Diseases ;
 and is called by the *Greeks*, from the
 use of the Hand, *χειρουργία* or *χειρουργία*,
 i. e. CHIRURGERY.

§. 2. FROM this Division, into
 which the Art of Medicine is de-
 duced,

to Chirurgery.

3

duced, agreeable to *Celsus* in the Preface of his first and seventh Book, that Part of it which cures by the Operation of the Hand, is not only the most antient, but also in many respects preferable to any other part of Physick, for its Certainty and Expedition in curing. The Invention of Surgery is ascribed to *Æsculapius*, whose two Sons *Podalirius* and *Machaon* are celebrated for giving much Relief to their Fellow-Soldiers in the famous Expedition against *Troy*, by their extraordinary Skill and Dexterity in the use of Instruments and Medicines. And this Art was very much improved by *Hippocrates*, who was the seventeenth in descent from *Æsculapius*, as appears from his Books, *de Officina Medici*, *de Articulis*, *de Vulneribus*, &c. After him it was cultivated by the *Greeks* his Countrymen, more than by any other Nation. The next who apply'd themselves to improve the Instruments and Operations of Surgery, were the *Arabians*, which we learn from the Writings of the famous *Albucasis*, who is the only one left of them, and from

An Introduction

Prosper Alpinus, in his Book *de Medicina Ægyptiorum*. The Writers of Surgery who succeeded afterwards, and introduced it into Europe, as *Guido de Cauliaco*, *Joannes de Vigo*, *Petrus de la Cerlata*, *Bertapalia*, *Lanfrancus*, *Gulielmus de Saliceto*, *Placentinus*, &c. have deliver'd to us only a mixed sort of Surgery, wherein they have been more solicitous in prescribing Medicines, than in teaching the uses and manner of applying the Instruments of Operation; which is a method I can't but think very foreign to the proper Business of such Authors. Thus *Jac. Hollerius* has a Book entitul'd., *de Materia Chirurgica*, wholly treating of Medicines.

§. 3. IF any one shou'd desire Proofs of the Usefulness of this manual Art, I wou'd advise him to consider *Celsus* in the abovementioned Places; who says, *When you are doubtful concerning the Advantages of Medicines in Diseases; yet in those cured by Surgery, it is plain, and or very much of the Cure depends upon that Art: and I add, that often*

times

to Chirurgery.

5

times the whole Cure immediately proceeds from the Operation of the Surgeon. For what is more obvious to the Senses, than the Benefits that accrue from the Amputation of a sphacelated Member, for the Preservation of the whole Body? Or from the reducing dislocated Bones to their proper Places? Or from the stitching of the Lips of Wounds together, for the more speedy healing them? &c. Probably 'twas the Consideration of these useful Consequences, which follow from the operative part of Physick so evidently, that first induced the antient *Asclepiadae*, or Descendants of *Æsculapius*, in their method of instructing their Pupils in the Art of Physick, always to exercise them first in those things which belonged to the Chirurgick Cure of Distempers; as may be seen in *Hippocrates's* little Book *de insē,* or *de Medico*, with the Comments of the Learned *Zwinger* upon it. And because the Method of treating them falls mostly under the Senses, consists chiefly in Experience, is more easy to be apprehended, and consequently less difficult in the Ad-

ministration; therefore *Chirurgery* was amongst them the first step they took in the Study of Physick; seeing it was more accommodated to the Understanding of Learners.

§. 4. IN the next place we may see how Surgery is like to be treated of in this our Age, when the Medicinal part of Physick is introduced and blended with it. For my part, I must declare, I am of opinion with the most Learned Writers; *Vidus Vidius Jun. Stephanus Gourmelinus, Joannes Jessenius a Jesen, and Aquapendens*, in his Book of *Chirurgical Operations*; together with *Marcus Aurelius Severinus de Efficaci Medicina*; that the Art of Surgery ought not to be considered in the *Concrete*, (as the Schools love to speak) but in an *abstracted* Method, *i. e.* entirely separated from any other part of Physick: by which means we shou'd not see those Diseases treated of in Books of Surgery, which want no assistance from manual Operation; nor shou'd we find tedious Harangues on the Nature of Diet, and impertinent Forms of Medicines, when

to Chirurgery.

7

when at the same time we hear little or nothing said of the operative Part. Almost every Author, who has wrote on the Chirurgick Cure of Diseases, has been guilty of the same Error; some of whom I have set down in §. 2. and from them you may see how promiscuously all Distempers of the external Parts have been discoursed of, as falling under the Art of Surgery, *viz.* *Tumours, Ulcers, Abscesses, Pustles, &c.* Not only the *Diagnostick Signs*, but also the internal and external *Causes*, the *Diatetick* and *Pharmaceutick* Method of curing them, have been so abundantly enlarged upon, that *Chirurgery* properly so called, makes the least part of their Books.

§. 5. BUT I must think those worthy Men, who first broke the Ice into this Art, do not deserve the same Censure; for if they did err, they did not so without great Authorities. They followed *Hippocrates* their Leader, who not only understood every Branch of Physick, but gave us a perfect Cure of all Diseases; as may be seen in *lib. de Morbis*,

and likewise in those Chirurgical Cases to be found scatter'd here and there, in his Books of *Epidemicks*. They deliver'd to us his Method of *Practice*, not that of *Instruction*; but: in this, there is greater Exactness,, which we shall chiefly follow in our Book. But what shall we say of those, who write of Chirurgical Operations, and at the same time premise an Anatomy of the Parts affected? Truly they do only what has been done, by inserting those things which shou'd be taught in another place. However, as the Civilians say, *Abundans cautela non nocet*, much Care never does any harm; and therefore they are rather to be tolerated, than reprehended by us: besides, they have *Celsus's* Authority, who notwithstanding took that method but seldom, and only in the most difficult Cases, where never enough can be said, because enough is never to be known.

§. 6. WHOEVER proposes to form a methodical Disposition of the Art of Surgery, or designs to inculcate it to others, shou'd take

a different Course from what has been, and he will certainly write best of it, who puts it into a method abstracted from all other Precepts of Physick; as has been done by those famous Men I cited in the beginning of §. 4. Amongst them, nothing is to be found foreign to their Subject, or not a Syllable is said of Diet or Pharmacy, any more than Arithmeticians treat of Magnitude, or Geometricians of Numbers. They concern themselves no further in any other part of Medicine, than in mentioning the names of Diseases, in a cursory manner. They have employ'd themselves in describing the Instruments and Operations, by which we must expect to cure Chirurgical Distempers, and also in digesting those into distinct Classes, for the better understanding them. They were mindful of what *Galen* says of *Hippocrates*, in *Comment. l. iii. Artic. 35.* of his Book *de Officina Medici*, That he don't remember in that Book, any Advice given concerning the use of Medicines; altho he does recount there some Affections of the Body, to the curing of

which, Medicines were necessary; because what he did at that time propose to treat of, was only Assistance exhibited by manual Operation.

§. 7. THIS Method was confirm'd by that remarkable Division of Physicians, which happen'd about *Erasistratus's* time, and is continued almost every where to this day. Whether it proceeded from that Tyrant, Custom; or because to cure by Diet, Medicines, and manual Operation, were different Offices; I shall not determine. *Celsus* very elegantly says, in the Preface to the seventh Book, *I conceive one Man to be sufficient to practise all the several parts of Physick; and where they are divided, I must commend him, who is most knowing in them all.* And the same Author says in the Preface to his fifth Book, *The parts of Physick are so intimately connected together, that they cannot be well separated at all.* But wherefore then, you may say, are some called *Physicians*, and others *Surgeons*; whereof *Those* restore Health, in curing Diseases, which want not the Assistance

ance of the Hand, by *Diet* and *Medicines*; and *These* undertake such Cases as do require *manual Operation*? *Vesalius*, in the Preface to his great Work, laments this too nice Division of Physick into separate Professions, and amongst different Artists; whose several Parts constitute the same Art: and he thinks it matter of great Indignation, to see Physicians (who boast themselves to be the Philosophers) delegate the principal, and most antient part of Physick to those, whom they made use of as Servants: from whence an Opinion prevails at this time, that the Practitioners of Surgery are inferior in Dignity to them, who practise the more Medicinal part of Physick. Notwithstanding this, I do esteem it a worthy Cause, to vindicate the Surgeons, in opposition to those, who are *emphatically* called Physicians; seeing this Branch of Physick depends as much upon Philosophy as any other: the *Diagnosticks* and *Prognosticks* are equally necessary and difficult, and the *Indications* of Cure are built upon the same Principles. Besides, the

Evidence and Certainty of a *Chirurgick* Cure exceeds any other. However we must take notice, there was formerly a twofold Order of Physicians, according to *Aristotle*, in c. 2. lib. 3. *Politic*. One sort of them were ἀρχιτεκτονικοί, who assisted as Architects by their Advice only. The others were ἰατροχειροί, who performed the Business of manual Operation, either in *letting Blood*, *applying Emplaisters*, *making Medicines*, or some such matters. The Original of all which seems to me thus, that when some of them were not disposed to handle fætid *Ulcers*, *Wounds*, *Fractures*, and the like disagreeable Cases; those who were perhaps their Scholars, or of an inferior Order, were commanded by them to perform the manual Operation, till by continual Practice, they acquir'd such an Understanding of them, that they excelled their Masters, who had neglected that Business. And altho *Aristotle* says, in *Chap. 4.* of the cited Book, 'Tis not necessary for him who presides as Master, to know how to act himself; but only to command how the Operation should

to Chirurgery.

13

should be perform'd; yet I can't well conceive, how it is practicable for any one to dictate to others the Manner of performing a difficult Operation, who is ignorant in performing the same himself. But undoubtedly it is more servile to act by Precept; which is the reason, Surgeons are at this time esteem'd inferior in Dignity to Physicians. And since it is thus their Lot, I would advise them to live contented in their Station, and act in submission to those, whom Custom, which has always the Force of a Law, has plac'd above them.

The First Section.

§. 1. CHIRURGERY, accord- *What Sur-*
ing to the Signification of *gery is.*
the Original Words, τ χειρὸς ἐργον, is
an *Operation of the Hand* only; but
from what has been said above, it
may more properly be defin'd, an
Instrument of Medicine, consisting in
an artful Use of the Hands. In this
Definition of Surgery, *Instrument* is
the *Genus*, which is common to it
with

with the other two, *Diet* and *Pharmacy*, by whose Assistance the Physician accomplishes his Business. Therefore in the undertaking an Operation, all these things are to be carefully thought of, and prudently disposed in order, so as they may be in perfect Readiness on all occasions, that we may succeed in the Operation happily, and according to our Wishes. The *Difference* appears by the *Operations of the Hands*; but they are not to be understood any other than what are *Dextrous* and *Artful*, acquir'd by long Use and Experience, and such as are conducive to the Health of a human Body. When I speak of Manual Operations, I comprehend those that are perform'd by the Master-Surgeon, as well as them done by his Servants. *Celsus* elegantly describes a Surgeon thus: *He ought to be a young or middle-aged Man, of a strong, steady and never-trembling Hand; as ready with the left, as with the right Hand; of a piercing clear Eye: He must be of an*

undaunted Courage, and unrelenting; fully resolv'd to go through with the Cure he has undertaken; unmov'd at the Cries of his Patient, lest he either makes greater haste than is convenient, or cuts less than is necessary. But although a Surgeon is able to perform all the Operations necessary to preserve or restore the Health of a human Body; yet Women, through Modesty, chuse rather their own Sex to assist them in some Diseases peculiar to themselves: and for this reason they are to be taken in under this Head, and reckon'd, in some measure, Operators in Surgery. So now in most places, it is customary for particular and dangerous Operations, to be perform'd by certain Men, who have had extraordinary Experience therein, and make them entirely their Business, separated from other Parts of the Art: and those Men *Hippocrates* * calls ἐργάται; *Ful. Pollux* χειροτέχναι; we in our Language, Operators: but they receive still more particular Names accord-

* In his ορκω, or Oath to be taken by Physicians.

ing to the Part of the Body they are famous for curing of: As those who depress a Cataract, and remedy Diseases of the Eyes, are call'd *Oculists*; and others, who are much experienc'd in extracting the Stone in the Bladder, are term'd *Lithotomists*. And this is not matter of Novelty but deriv'd from Antiquity: for *Hierodotus* ³ relates, there was a Custom amongst the *Aegyptians*, that several Distempers should have peculiar Physicians; some were appointed for the Eyes, some for the Diseases of the Belly, and others for those they call'd *Occult*. *Galen* ⁴ takes notice of such a Division in *Rome* in his times and according to ⁵ *Prosper Alpinus* the same is at this day in *Aegypt*. Those who act as Assistants, need not necessarily be Pupils in the Art; it is only requisite they should have a nice Hand, and be accusom'd to present an Instrument, or any thing else the Surgeon wants in the Operation.

³ Lib. 2. ⁴ Lib. 10. de Usu Part. c. 11.

⁵ De Medicin. *Aegyptiorum*, cap. 1.

§. 2. THE *Operations* are divided ^{Of Opera-} by us into those which are perform'd ^{tions.} by the Hands alone, or into them that require the Use of Instruments, and sometimes Machines; whence ⁶ *Galen* calls such Physicians *οργανολοι*. To the undertaking either of these, a proper *Place*, and convenient *Light* is necessary. The *Place*, ⁷ *Hippocrates* solicitously admonishes his Pupil to make a careful choice of; and it ought to be such, as the Surgeon may handle, as occasion is, the affected Member without Trouble to himself, or Pain to the Patient; for which those little Beds, we commonly call Couches, are very convenient. The *Light*, as ⁸ *Hippocrates* says, is twofold, either *common* or *proper*; the first we all use, and the last may be so manag'd by the Surgeon, as to serve the Occasions of his Business. Thus sometimes the Windows are to be shut, sometimes open'd; and at other times a Candle is to be us'd, which we may place

⁶ Lib. 7. de Usu Part. Cap. 14.

⁷ Lib. de Medico.

⁸ Lib. de Offic. Chir. & Lib. *αὐτὸς ἐν τῇ*

nearer

nearer to, or farther from the Part as occasion requires. Of Light we make a double Use, either in bringing it near the Part, when we want a clear Light, or removing it at a distance when 'tis offensive, as in Inflammations of the Eyes, or where 'tis less Modesty to expose too much the Parts affected.

*Operations
with In-
struments.*

§. 3. AMONGST all the Operations which effect the Cure of Diseases, those, which bring about their Purpose by a dextrous Application of Instruments, make the principal Appearance. The most celebrated *Vindius*² contends, that immediately after the Assistants, Instruments may be named; for they are inanimate Servants, and necessary Companions in the Business to be effected. These Masters of Mechanick Arts, first of all generally teach their Scholars the Knowledg and Names of the Instruments; whose Example I shall not disdain to follow in this Work, but describe shortly the Instruments,

² Lib. 1. Cap. 6.

which Surgeons commonly make use of; although I would advise my Readers to look now and then into the Armory of a Practical Surgeon, and sometimes to examine the Figures of *Ambrose Parey, Gulielmeau, Joh. Andr. a Cruce, Fabritius Hildanus, Gab. Ferrar,* or the *Armamentarium* of *Scul-tetus*: where a Student in Surgery will find many of *rare* use, amongst the rest that are more common, and those which are carry'd about by every Surgeon in a proper Case; as an *Incision-Knife, Forceps, Probe, Spatula, Scissars, &c.* But there are many more call'd Capital Instruments, kept always at home in a convenient dry Place.

§. 4. THE *Instruments*, in general, *Instru-* may be divided in a threefold Man-^{ments,} ner; with respect to their *Matter,* ^{their Di-} *Form,* and *Use.* 1. According to their *Matter,* some are made of *Gold,* as the ' *Thread* which connects factitious Teeth to those that are sound; and some Surgeons use a Golden Caute-

¶ *Paræus, Lib. 23. Cap. 3.*

ry, as ² *Severinus* advises. 2. Other of Silver, as the Needle, ³ *Duret* *Schacch* appoints to couch Cataracts with; altho ⁴ *Parey* has rightly prefer'd a Steel one; and also the *Plat* us'd to supply the Deficiency of the *Os Palati*, according to ⁵ *Parey*; and the Catheter made use of to search the Bladder, in ⁶ *Parey*. 3. Of Brass, as the *Meningophylax* of ⁷ *Celsus* whereof consult ⁸ *Pavins*: and such Metal Syringes should be made. 4. Of Tin, as *Ventose* Instruments for Cupping. 5. Of Lead, as the Probe for searching Sinuosities, according to *Vidius* ⁹; and also a ¹ *Leaden Annulus*, to secure the Eye in any Operation; and a *Malleus*, after the use of the *Trepan*, as *Botallus* ² teaches. 6. Of Iron, and such are those which are used in Cutting and Perforation.

² Pyrotech. Chir. l. 1. p. 2. c. 5.

³ Subsid. Med. l. 1. c. 2.

⁴ Lib. 17. c. 22. ⁵ Lib. 23. c. 4.

⁶ Lib. 17. c. 35. ⁷ Lib. 8. c. 3.

⁸ In Hipp. de Vulner. Cap. p. 257.

⁹ De Chir. l. 1. c. 2.

¹ Vid. Aquapend. de Oper. Chir. tit. de Ung. Oculor. & Par. l. 10. c. 25.

² P. 676. Edit. Lug. Bat.

as the *Needles, Knives, &c.* 7. Of *Glass*, as the *ocular Cucurbitula* describ'd by *Aquapendens*³; and the *Mammary* ones, according to *Ferrarius*⁴; also *Ambr. Parey*⁵ has farther added a *Glass Eye*. 8. Of *Horn*, as the *Cupping Instruments* much used in the *German Baths*, made of the *Top of a young Ox's Horn*; ⁶ also *Catheters* may be made of *Horn*; which are introduc'd much more commodiously into the *Bladder* than *Silver* ones, from their *Flexibility*. They are made fit for use by being immersed in warm *Water*. 9. Of *Ivory*, such are the *Extremities of Syringes*, which are used in the *Anus, Penis, or Matrix*, when 'tis necessary to inject a *Glyster* into those *Parts*. 10. Of *Wood*, as the *Glossocomium*; or *Splints* for the secure *Position* of fractured *Legs and Arms*. 11. Of *Cork, Gentian, Sponge, or Elder-Pith*; and such are *Tents* for the *Dilatation of Ulcers, Fistula's, &c.*

³ Lib. de Oper. Chir. tit. de Suffusione.

⁴ Lib. de Art. Med. Infant.

⁵ Lib. 24. c. 35.

⁶ Castellan. de cucurb. c. 3. l. 1.

12. Of *Linen* and *Wax*, simple or medicated, as *Wax-Candles*, &c. of which *Gorræus* may be consulted in the Word *μολδς*. Also *Bandages* of many kinds, and *Lint*. 13. Of *Silk*, as in a *Seton*. 14. Of *Woollen*, as some sort of *Splenia*. 15. Of *Hemp*, as *Ligatures*. The second Difference is from their *Form*: as some are Circular, so others are of an Oval Figure, as *Pessaries*⁷; some are Triangular, as *Cauteries*, *Plates*, &c. some are of a *Lenticular*, *Pellican*, or *Crows-Bill* Form. The third Difference is taken from their *Uses*, as some are adapted to *Incision*, *Perforation*, *Extraction*, *Dilating*, &c. some are peculiar to Wounds of the Head, others to Distempers of the Bladder, &c. Their Number cannot well be determin'd, since every day there are new ones invented, or others substituted of more commodious Use than those were heretofore.

Operations,
their Divi-
sion va-
rious.

§. 5. 'TIS now time to come to the *Chirurgical Operations* themselves, the Division of which is yet various,

⁷ Vid. Scultet. T. 17. f. 7, & 8.

according

According to those famous Men I commended in §. 4. of the Introduction. *Gourmelinus* divides them into three species; *Synthesis*, [or Reuniting;] *Diarexis*, [or Dividing;] and *Exarexis*, [or Extracting;] and according to him, *Synthesis* is either common, as in *Deligation*, making *Bandage*, &c. or it is special, when 'tis employ'd in *Fractures* or *Luxations*; or a *Solution* of *Continuity* in the fleshy parts. *Diarexis* is divided, by the same Author, into *Incision* of the soft Parts of the Body, as in *Phlebotomy*, separating mortify'd *Flesh*, *Aperion* of the *Bladder*, &c. or into those operations which separate the hard parts, by *Terebration*, *Sawing*; or by touching *Cataracts*, penetrating the *Abdomen* of an *Hydropick* Patient; or opening the *Hæmorrhoid Veins*, by *Leech*; or by *Divulsion*, as plucking off *Sucking-Glasses*, and taking out *Teeth*; or by actual or potential *Canteries*. Lastly, *Exarexis* is the extraneous extracting any extraneous Bodies which wound us; as *Bullets*, *Darts*, or those things which may happen to fall into the *Eyes*, *Ears*, *Jaws*, &c. or any noxious Substance that should

should be generated in the Body as the *Urine, Fœtus, Secundines, &c.* *Jessenius* says in his Preface, that the Operations of Surgery consist, first, in a Solution of Continuity; secondly, in reuniting Parts divided; thirdly, in extirpating superfluous Parts, and, fourthly, in supplying those which are deficient. ⁸ *Vidus Vidius* gives this Division of Surgery: either, says he, 1. is assistant only, or, 2. it assists and acts; or, 3. simply acts. The first Member of this Division, he further subdivides into three others. It assists us in our Knowledge, or in our Knowledge and Practice, or in our Practice only. *At* gain, what helps us in our Knowledge is necessary either before we attempt to cure, as *Anatomy*; or afterwards, as *Exploration*: that we may come at the Knowledge of Matters, and act at the same time, there are necessary the shaving off the Hair, detarging the Sanies, &c. but to Practice only, are requir'd, the Application of Medicines, Venesection

Breaking a Stone, &c. The second Member of the first Division comprehends what assist as well as act; and these are, the making *Bandage, Extension, Friction, &c.* To the third Member belongs what acts only, and is either by correcting what is amiss, by *Conjoining, Dividing, Directing, Compounding*; *Restoring* what is Dislocated, *Raising* what is Depressed, *Supplying* what is Deficient; or in *Remedying* what is Superfluous and Preternatural, by *Translation, or Detraction*, as a Stone is translated; and *Detraction* is performed by *Incision, Evulsion, Cauterizing, &c.*

§. 6. I H A V E been the more prolix on these several Divisions given by Authors, that the difference of our Method from theirs might thereby appear plainer, and how easy it is to be understood, by any one who has mind to learn the Chirurgical Operations, in a compendious manner. I divide them into General and Special. I call them General Operations, which have a place in all those Distempers, that are cured by Manual Operation (a few only
C except-

The Author's Division of Surgery.

of Opera-
tions gene-
ral.

excepted) and they are three, viz. *Exploration*, *making Bandage*, and *Application of Splenia*. Again, they are *Special*, and are either *curative* of Diseases, and are comprehended under *Synthesis*, *Diarexis*, *Exarexis*, *Apharexis*, *Prosthesis*, *Diorthosis*; or *Applicative of Medicaments*: and these are either *Natural*, as *Leeches* and *actual Cauteries*; or *Artificial*, which are *Liquid*, as *Injections*, *Fomentations*, *Instillations*, &c. or *Solid*, as *Emplaisters*, *Pessaries*, &c.

Of Explo-
ration.

§. 7. WITHOUT doubt when a Surgeon is called to a sick Person he will, as he ought to do, before any thing, examine what, and how dangerous a Distemper it may be, that the Patient labours under. This is either to be immediately apprehended by the Eyes, or by some other Means, as of the whole Hand, or sometimes one or two Fingers only; v. g. for the discovering *Oedematous*, *Ventose*, or *Erisipelatous Tumours*; or investigating the Stone in the Bladder, by intruding the Finger in *Ano*. Not only the use of the Hand, but *Instruments* too

are required to a perfect Knowledge of some Diseases; and thus by a *Probe*, we find a Caries in Bones, a Fissure in the Skull, the Depth of Wounds, Ulcers, and Fistula's, the Caruncles in the Urinary Passage, or any extraneous Matter that lodges in Wounds, &c. *Probes* have globous Form at the end, or are thin and broad. They are made of *silver, Lead, Iron, or Wax-Candles*, which are commonly used to extreme sensible Parts, where a dextrous Hand is chiefly required. Here also belongs the *Catheter*, which *Hildanus*¹ thinks so necessary to a certain Knowledge of the Stone in the Bladder; together with the famous *Amrose*² *Parey*, whose Figure and Use different from the rest. Here likewise must be reckon'd the *Speculum Oris, Ani, and Matricis*, whose Figures may be seen in *Vidius*³, *Parey*⁴, or *Sculptetus*⁵. They are used in those Distempers which af-

¹ Lib. de Lithot. Ves. cap. 3.

² Lib. 17. cap. 35. ³ Lib. 2. Chir. c. 3.

⁴ Lib. 24. c. 76. ⁵ Tab. 17. Fig. 1, 2, 3.

fect Parts, where they cannot be discovered by the Eye, or cured by the Hand, unless their Lips are dilated and separated from one another.

Of Ban-
dages.

§. 8. I NEED not spend any time in proving the Advantages of *Bandage* in Surgery, since from its Usefulness, *Hippocrates*⁶ has prescribed that it shou'd be studiously observed. *Rollers* are to be made generally of *Linen*, smooth, and free from Seams, not new; but strong enough for any useful Purpose; and for the greater ease of the affected Part shou'd be cut according to the Course of the Thread. As to their Figure, some are simple with one Head, others with two Heads, which are very commodious to be used by both Hands; and some are yet more compounded, such as we use in Rupture and the Deligation of the wounded *Perineum*, after Extraction of the Stone in the Bladder⁷. Their length every expert Surgeon varies, according

⁶ Lib. de Off. Med. & Lib. de Fract.

⁷ Vid Scultet. Tab. 29, 31. Fig. 9. Tab. 44.

ing to the necessity of the Case. They are used either to keep on *Dressings*, or with a small *Compress* to prevent Bleeding again, after the Operation of Phlebotomy; to preserve the sides firm and steddly in violent Coughs, or Succussions; to prohibit an Influx of Humours; and also to retain fractured and dislocated Bones in their proper Places. Secondly, They are used to reduce the Lips of Wounds together; and Thirdly, to dislodge Matter in a declive *Sinus*, by binding tightly on the bottom of the Sinuosity, and so all along till you come to the Orifice, where it must be loose, that the contain'd Humour, may flow out by a *Canula*, or hollow Tent. In all sorts of Bandage particular regard is to be had to its Security: for when it is lax, it is uselefs; and when too strait, always produces Inflammation, Pain, and oftentimes a Gangrene. Therefore *Galen*⁸ very prudently advises a Surgeon to exercise himself often in this part of his Bu-

⁸ Comment. 1. in lib. de Off. Med.

finess, by making Bandage frequently on some sound Person. The Quality and Compression of the Bandage is to be known, partly from the Complaints of the Patient, and partly from the Tumour about the Extremity of the Member ; therefore Questions are to be often asked concerning it : but if the Day after the Operation, the Tumour shou'd be little and soft, it signifies a good Bandage ; if hard, a too strait one ; and if there be none at all, the Member is not well bound, but too loose and slack.

Of Ligatures.

§. 9. I MUST not omit adding to the account of Bandages, those called *Laquei*, or *Ligatures*, which are commonly made of Linen or Hemp. Their Names were various amongst the Antients, according to their different Purposes. One sort was called *Modus Nauticus*, from the Sailors manner of making it ; another was *Pastoralis*, or Shepherd's Fashion &c. Their Uses are in Venæsection in any Part, to stop the reflux Blood, that the Vein may swell ; or in the Operation of the *Hernia*, by

Castrat

Castration of the Testicle, to con-
stringe tightly the Process of the
Peritoneum; or also in the Opera-
tion of the Aneurism, where a
strong thick Thread is made use of,
by the means of a curved Needle, to
intercept the Blood from the great
Vessels: and Ligatures are necessary
in Amputations; and they likewise
serve to stir up Pain in the Extremi-
ties of the Limbs, to make a Revul-
sion of the too impetuous Blood.
They are sometimes employed to
make strong Extensions in Fractures,
and Dislocations, and afterwards to
bind on the Splints, &c.?

§. 10. 'TIS not unusual to reckon *of Sple-*
amongst Bandages, *Pulvilli* or *Splenia*, *nia*, or
so called, from being commonly ob- *Compres-*
long, and thick, resembling a *Spleen*; *ses.*
always made of Linen. They may
be adapted usefully to fill up the Ca-
vities, which are under the Ham,
and between the Calf of the Leg
and Heel; whereby they may be the
better compressed by the Bandage.
They are very often moisten'd with

2 Vid. Scultet. Tab. 29. Fig. 4.

Oxycrate, and oftentimes applied dry, that they may defend the Parts from the Stricture of the *Fascia* or *Ferula*.

Of the Special Operations.

§. 11. NOW after having been very particular on the general Business of a Surgeon; I think those Chirurgical Operations follow in Courses which I call *Special*, whereof those that are *Curative of Diseases* obtain the first Place; for they are designed as Remedies to a whole Class of Distempers, which they relieve to the utmost of their power. The first of them is *Synthesis*, which is a *Conjunction* of what is *disjoined*, whether it be a Bone, Flesh, or any other soft Part. Bones are disunited two ways; either with respect to their Contiguity, which is called *ἑξάρθημα*, a *Luxition*, whereto belongs a proper Operation, *ἀρθρεμολογία*, *Reduction*: Or with regard to their Continuity, which is termed, *κατάγμα*, a *Fracture*, whereto is opposed, *συνθεσις*, *Composition*.

Of Fractures.

BONES are fractured either Simply; or with a Wound, when their acuminate Extremities perforate the Muscles and Skin. The same happens,

pens, when in a Gun-shot Wound, the Bullet breaks the subjacent Bone. A simple Fracture may be three ways; *καυλησδον*, *Transversely*, like the broken Stem of a Plant; or *χιδακησδον*, as of a Joist *Obliquely*; or *αλφισησδον*, when it is shattered into small Fragments like Bran. These Names are given by *Hippocrates*¹, but more distinctly by *Aegineta*². In all these Cases there is only one Intention, that the Parts of the fractured Bone may be united again. But the Surgeon cannot effect this Union, it is the work of Nature alone, which, in Children and Young Persons, is made by an intrinsic and immediate Coherence of the disjoin'd Parts; but in Adults the broken Extremities are conjoined together by an intervening *Callus*, like Glew. However you must be sensible, that in both there is an intervening Substance, *viz.* the very Nutriment of the Bone, which effervesces there, until it is concocted, and swells the Sub-

¹ Lib. de Articulis textu 28, 32.

² Lib. 6. c. 89.

stance of the Bone, as we see in the Stocks of Trees grafted upon. But because this Effervescence is greater in Adults, whose Bones are drier, hence it is that oftentimes much thick Matter flows together, which makes a remarkable Callus round the Bone like a Circle; and this is what the Surgeons call curing by the *second Intention*. But the Surgeon does this Business in a diverse *Extension* of the fractured *Member*: for, when the Fibres of the Muscles, being left destitute of the strength of the Bone, follow their own natural Determination, and are contracted within themselves; it is necessary that those, together with the broken Bone, shou'd be removed by Force to their natural State. This is done, either with the Hands only, or with Ligatures, or with Linen Bandages conveniently fixed round the Member, or with a Cord run thro a Pulley, such as *Hildanus* ¹ has given an Example of, and likewise according to *Sculptetus* ². Next to Ex-

¹ Cent. 5. Obs. 86.

² Fig. 1. Tab. 22.
tension

tenſion follows *Conformation* or *Coaptation*, when the Surgeon endeavours to reduce the Member to its priſtine Figure, holding it with either Hand, and by compreſſing this or that way, forwards and backwards, &c. until the diſlocated Parts are reſtored to their own Situations; which is known by the Ceſſation of Pain, Equality in the Superficies of the Bone, and by a Compariſon with the ſound Member. It needs not concern us, if the Limb, after being reduced, ſhou'd appear longer; for this is owing to the violence of Extension. The Bones being thus well placed, they are to be retained exactly ſo, by *Deligation* performed by two Rollers, with many Circuits, from the Right to the Left, and ſo on the contrary; or by the Bandage of many Tails, (of which you may ſee Figures in *Sculptetus* ') which is of great uſe when the affected Part requires frequent Inſpection; as when a Wound is joined with a Fracture, or when it is in the middle or ſur-

perious Part of the Thigh. After Bandage is made, *Reposition* of the Member is necessary, and it is to be done either in a Wooden or Leather Case; such a one as *Hildanus* describes^{*}; or in a soft Pillow, so as, in consideration of the succeeding Inflammation, the Extremity of the Limb may lie highest, and the Foot perfectly free from any Pressure.

Of Luxations.

§. 12. THE Bones also are loos'd from their Continuity in *Luxations*, which has properly a place amongst those Bones, whose Structure determines them to a manifest Motion; as are all those Joints united by *Diarthrosis*, for we see as often as they are displaced, the Motion of the Joint ceases. But in Bones join'd by *Synarthrosis*, where there is no manifest Motion to be seen, it cannot be lost indeed; but from the Compression of the Tendons, or Ligaments, Pain arises, and the Action of the Part is hindred: as for Exam-

^{*} Lib. de Ichor. & Melic. cap. 29. and also in Scultet. Tab. 56. Fig. 1, 2, 3.

ple, in the little Bones of the Wrist and Ankle. Luxations happen in a twofold Manner, either perfectly or imperfectly; one Species is call'd by the *Greeks* ἐξάρθημα, or *complete Luxation*; the other ἀράρθημα, or *Subluxation*: but whether such a one ever happens, I very much doubt; if it does, it is occasion'd by an internal Cause only. For the internal Cause of Luxations is either a natural Laxity of the Ligaments, or a Humour collecting in the Cavity, which gradually increasing, extrudes the Head of the Bone: The external Cause is a Fall, Blow, Leap, or Extension, and violent Motion of the Part. In either kind, the only and common Indication is reducing the dislocated Member to its proper and natural Seat; which Operation the *Greeks* elegantly call ἀρθρέμωλον. But whoever intends to perform this Operation successfully, ought first of all rightly to understand the Nature of all the Articulations in a human Body; for by that way the Bone was dislocated, it is to be reduc'd to its own Place again. But to this Reduction are necessary, 1. ἀντίζασις; for

for a luxated, like a fractured Member, requires Extension, as well on account of the Contraction of the Tendons, as also that the Head of the Bone may more directly be intruded into its Seat. This Extension is made either by the Hands alone, and is call'd *Modus Palæstricus* because amongst the Wrestlers, dislocated Members used to be reduced after this most simple manner; or by Ligatures or Towels; or by Instruments, or great Machines, when the Luxation is difficult and inveterate. But on this matter consult *Hildanus* ¹. Next to Extension follows the *intruding* of the Joint into the natural Cavity; which likewise may be effected by the Hands only, or by the Heel (as when the Head of the *Os Humeri* is fallen into the Arm-Pit) or by the means of Ladders, Doors, Pestles, or *Hippocrates's* Instrument call'd *αὐλὴν, Ambi*: This Method is term'd *Methodical*, for Distinction of the third, which is call'd *Organical*, because it succeeds

¹ Cent. 5. Obs. 69, & 86.

by great Instruments and Machines^a, which is now altogether out of use. *Gourmelinus*, besides these, adjoins *ἀπόθεσις*, when the Member is reduc'd into its own Place in the very Fact; which is to be known by the Sound, that is usually heard, or also from the Use and Motion of the reduc'd Joint. But because, from the Laxity of the Tendons, &c. the Bone cannot remain in its natural Position, it is necessary yet further to apply Compresses and Bandage, by whose means the Articulation is preserv'd safe, till the Ligaments may acquire their usual Strength of Elasticity and Astriction.

§. 13. THE like Chirurgical Operation commonly occurs in the *fleshy*, or soft Parts, whose *Continuity* likewise is dissolv'd, or *Contiguity* vitiated. Of the first sort is a *Wound*, which is a fresh and bloody Solution of Continuity: but if it be inveterate and sanious, it is call'd an *Ul-*

^a Vid. *Oribasium* in *Lib. peculiar.* & *Scultet. Tab. 22. Fig. 4.*

cer. Of Wounds there is a great Diversity in respect of the Part wounded, and also according to the Situation, or whether they are inflicted in an oblique, transverse, or right Line. Again, one Wound is simple, another with Loss of Substance, and another with Læſion of the internal Parts. A simple Wound has a simple Indication, which is that the divided Lips may be united again. Where these are recent and bloody (or, if they are not so, their Callosity is to be remov'd, by the means of Scissars) they are to be brought towards one another, and kept so together, till Nature can, by the Mediation of some natural Balsam, unite them firmly together; not much otherwise than what we see in the Graftings of Trees. *Adduction* is perform'd either by Suture, Deligation, or some glutinous Mixture, which they call a dry Suture; or by an Instrument compressing the Parts: and all these may be used separately or conjointly. *Gourmelinus* calls this Operation *Επαράγνυς*, or *Induction*, and reduces to it the Surgery of supplying deficient Parts by

In-

Inoculation; of which we have a particular Book by *Taliacotius*: but this Matter is to be left to its own Author. We shall content our selves with the *Suture*, which is chiefly of use in transverse Wounds; or when the Place does not admit of Bandage, or where the Part is not compleatly separated from the whole, but still adheres by a little Piece of Skin. To the performing rightly the Operation of a Suture, we make use of a *triangular Needle*, whose Point ought to be somewhat crooked, armed with *Thread* or *Silk*; and of a *Canula*, commonly call'd a *stitching Quill*, whose extreme Part is *perforated*, against which the Lip of the Wound is pressed; lest, while the Needle is piercing, it should move away. But sometimes when we have occasion to make a Suture, it requires that we leave one or more of the Needles in the Flesh, and roll around them the Thread or Silk, as is usual in *Hair-Lips*, or *deep Wounds*³: and sometimes, after having convey'd the Nee-

³ Vid. Par. lib. 10. cap. 26.

dle and Thread through both Lips, we only tie a Knot, and cut off the superfluous Part of it; which, in superficial Wounds, that do not exceed the Skin, may be sufficient. Sometimes we use a *Glover's Stitch*, as in Wounds of the *Intestines*, *Abdomen*, or *Parts depending*. Sometimes *Deligation* alone is sufficient, as in Wounds of the *Limbs* made longitudinally, and it is to be perform'd by applying Compresses on both Lips; and over all, a simple Bandage. The *Emplastrum glutinatorium*, or dry Suture, is made use of in Wounds of the *Face*, to avoid the Deformity, which the Punctures of the Needle usually leave behind. Formerly they were made by triangular Pieces of Linen, brought together by Strings or Ligatures, as is to be seen ⁴ in many famous Authors. But now we only apply sticking Emplaisters, about the Breadth of the little Finger, firmly adhering to the Skin, amongst which, *Diapalma* right-

⁴ Apud Joh. Andr. á Cru. lib. 2. Tract. 2. Paræum, lib. 10. cap. 26. & Gulielm. Tab. 6. Fig. 2.

ly prepar'd excels. But I ought not to omit the *Instruments*, which, by compressing the Orifices of the wounded *Veins* or *Arteries*, do not a little administer to their Consolidation; and the rather, because I remember the Illustrious and Noble *Hooffdius*, in the nineteenth Book of his *History of Holland*, relates, how *Leonardus Botallus* stopt a Bleeding in the *Jugular Vein* of the most High Prince of *Orange*, *William* the First, only by imposing a Finger on the Orifice. This Artifice has been formerly describ'd by *M. Gatinaria*, who lived about the Year 1440^s. Most certainly instead of the Fingers, compressing Instruments are to be preferred.

§. 14. IN treating of the *vitiated* Of the
Contiguity of the *soft Parts*, I hope *Disloca-*
the Reader will not be offended, or *tions of*
think it strange, to see it refer'd to *the soft*
this Class: since it is evident to any *parts.*
one, who considers the Matter, that
there is a great Affinity between the

Luxations of Bones, and the falling out of the *Viscera* from their natural Situations. The *Omentum* and Intestines frequently fall into the Groin or *Scrotum*; also the *Uterus* it self or the Neck of it, suffers a *Prolapsus* and very often the *Intestinum Rectum* slips out of the *Anus*; and sometimes the Navel shoots out too far. The Operation that remedies these Disorders, is call'd *τάξις*, or *Reposition* but the Intention of the Surgeon must be not only to reduce the Parts to their pristine State again, but likewise to retain them there, by obstructing the Passages thro which they elapsed. *Reduction* is either Spontaneous, without manual Assistance, as in the *Prolapsus Ani*; whence by the use of a warm Fomentation only, the Intestine returns, by the *Musculi Elevatores* being corroborated, and thereby the Substance of the Intestine corrugated. *Hippocrates*⁶ teaches another sort of Surgery; he also advises, in a *Prolapsus Uteri*, that a *Cupping-Glass* be apply'd

⁶ Lib. de Fistulis, §. 4.

about the Hip ⁷; or it is ⁸ perform'd by the *Hands*, as when the Intestines fill the *Scrotum*, or the *Uterus* is slipped out of the *Abdomen*; or by a shaking of the Body, or setting the Patient on his Head, as in the Cases already mention'd; and in a Prominency of the Navel. The Parts are to be *detain'd* in their natural Position, either by Bandages, such as we use in Ruptures; or in the *Exomphalus* of the Navel by a Compress, with a Knot upon it: *Hildanus* ⁹ has delineated the manner of performing both these Methods, and added the Cures effected by himself. Or by *Circular Pessaries*, especially those made of *Cork*, and intruded into the *Vagina*: for the Substance of the *Cork* being porous, will swell and keep it self in the Passage, which is very much to be doubted of those *globous* or *pyriform Pessaries*, that are describ'd by *Hildanus* ¹, being made of *Box-wood*. *Gu-*

⁷ Lib. 2. de Morb. Mal. §. 38.

⁸ Hild. c. 3. Obs. 76.

⁹ Cent. 3. Obs. 64. Cent. 6. Obs. 69, & 73.

¹ Cent. 4. Obs. 60.

lielmeau was the first Author of these circular ones ¹. In all these Cases Nature, if assisted with proper Medicines, will so straiten, and sometimes close up the Passages, as to prevent any Relapse hereafter.

2. *Diæresis*. §. 15. THE *second Species* of Chirurgical Operations comes now to be treated of, and is directly contrary to what we have already recounted ; for it is *Diæresis*, or a *Division* of *entire Parts* ; and those are either joined naturally, or tied together by some other Connection. This kind of Operations is exercised either on the hard or soft Parts. The Continuity of the *Bones* is dissolv'd, 1. by *Perforation* ; and we perforate a Bone either with a Mechanick's *Terebra*, or Piercer ; so *Hippocrates* ² advisess to bore the Rib in a Dropsy of the *Thorax* : or by a *Trepan*, which is a hollow steel Instrument, smooth and round, having its under-Margent indented like a Saw ; but with this

¹ Lib. 3. de Gravid. & Part. cap. 29.

² Lib, de intern. affect.

we do not so much perforate, as we cut out a Piece from the Middle of the Bone. The Trepan is of two kinds; the *Male*, which has in the middle of it a sharp Pin, or the *Female*, which wants that: the first we use from the Beginning, till the Trepan has describ'd a Track to circulate in; and the other, till both Tables are perforated. Their Excellency consists in being so contriv'd, as they cannot be immerg'd or thrust into the Bone, without the Determination of the Surgeon. [*To which End it had heretofore two sharp Wings on each side, as may be seen in Berenarius de Fractura Cranii, at Venice, 1535. but Coringius, in his Edition of that Author, has delineated it wrong; giving a Figure of it conformable to its present Structure, having many sharp Wings all around the Cylinder.*] But because it must be turned around, it is necessary to adapt a *Handle* to it, either having the Figure of the Letter T, or like a Joiner's Tool call'd *Wimble*, which is to be kept firm by one Hand, and moved round by the other: and as this is more excellent than the former, so it is more in

in use. [The former of these we call in England a *Trafine*, and, contrary to our Author, prefer it to the latter which we call a *Trepan*, tho Mr. Wifeman was of his Opinion. The Figure of the *Trafine*, as made in England may be seen in Woodall's *Surgeon's Mate*; where at Page 313. he gives Reasons for its Preference, and pretends to be its Inventor; tho *Aquapendern* had describ'd it before him in his *Operations*, where he gives a large Account of these Instruments, as you may find at Page 201. of the 25th Edition at Padua in 1666.] 2. By *Sawing*, 1st we use little Saws of many sorts to the *Os Cranium*. 3. By *Excision*, as with excisory *Forceps*, after the Use of the *Trepan*. 4. By *Scraping*, when the Bone is affected with *Blackness* or *Inequality*. Here also is to be reckon'd *Limation*, or *Filing*, which is perform'd on the Teeth. The Figures may be seen in *Parey's* tenth Book, and in *Sculptetus*, Tab. 2. & 6..

A Division of the *soft Parts* is made in various ways. 1. By *Punctiō* with a *Needle*, as in depressing a *Cataract* ¹

¹ Dur. Scach. Subsid. Med. l. i. c. ii.

or when Blisters in the Eyes are to be pricked; or when a *Seton* is made in the Neck¹; or when the Skin, together with the *Pericranium*, is perforated in a *Hydrocephalus*; or in the Navel elevated into a Tumour by *Mercurium*²; or the *Scrotum* swell'd with Water, is likewise to be perforated or also by a peculiar cannulated Instrument, such as *Barbette* describes³, and is used in the Operation of a *Paracentesis* in the *Abdomen* of *Hydropicks*: or by the *Point* or *Edg* of *Launcet*, as in Scarification, and in striking of varicose Vessels. 2. By *Section*; and that is done with the *Point* of a *Launcet*; as the Incision of *Veins* and *Arteries*, and the Apertion of Abscesses or *Vomicae*, and the *Larynx*, *Anus*, *Penis*, and *Vulva* imperforated, are to be open'd by this means; Examples of which may be seen in *Hildanus*⁴, and *Wierus*, in the end of his little Book of Observations: altho for an imperforated

¹ Vid. Hildan. Cent. 1. Obs. 40.

² Vid. Tulp. lib. 4. Obs. 42.

³ Chir. Part. 1. cap. 15.

⁴ Cent. 1. Obs. 73. Cent. 3. Obs. 60, & 61.

Anus, there is now an Instrument used little differing from that which is extant in *Scultetus*⁵; also for the Scarification, which is made in moistify'd Parts, and in the Legs of Hemorrhoidick Patients⁶: or by the *whorl* Body of the Instrument, as in the Incision of the Scalp, in the Apertion of the intercostal Space in an *Empyema*, in the Cutting of the Bladder in the Operation of *Lithotomy*. Or a Separation of the scrofulous Parts is made by *Probe-Scissars*, as in laying open Sinuosities; or when the Fingers are join'd together by a Membrane from the Birth; or when the Ligament under the Tongue is too long; or the *Uvula* corrupted; or when the Prepuce adheres to the *Glans*⁷; or a *Fungus* is left in the Ear. 3. By *Divulsion*, as is done in the Use of *Cupping-Glasses*. Also by a *Thread* wrung tight every day; or by a *Weight* hung to any Part

⁵ Tab. 14. Fig. 20, 21.

⁶ Alpinus, lib. 3. cap. 9.

⁷ Vid. Hildan. Cent. 3. Obs. 54.

⁸ Id. Cent. 3. Obs. 1, 3.

⁹ Vid. Celsus, lib. 7. cap. 4.

to Chirurgery.

51

grown together, for the sake of separating them; an elegant Example of which way of Curing, is extant in *Hildanus*¹. 4. By *Ustion*, and that is either *Actual*, as by a *hot Iron*; or *Potential*, by a *Caustick* prepar'd from a *Lixivium* of Pot. Ashes.

§. 16. I MAKE the *third Species* 3. *Extraction of Operations Exarefis, or an extract-refis.* *Extraction of noxious Substances sticking in our Bodies.* These are either generated in our Bodies, or otherwise they come from without. Those things which are generated within us, may create much Uneasiness and Pain: as, . The *Urine*, which, if it remains too long in the Bladder, brings cruel Pains, and also Death it self, unless reasonable Assistance be given. The Operation that brings Relief is call'd *Catheterismus*, because it is perform'd with a *Catheter*, i. e. a Silver Tube, smooth and curved, as *Celsus* describes it, and also accurately delivers the manner of using it²; for by this the *Urine* is evacuated.

¹ Cap. 6. Obs. 7.

² Lib. 7. cap. 26.

2. A *Stone*: this sometimes is small, as to be forced out of the Bladder, and to stick in the *Urethra* out of which an Orifice being made by Incision, it is to be extracted by a little *Spoon-like Instrument*³: but that which remains in the Bladder after an Incision in the *Perineum*, is extracted either by a greater Instrument, call'd *Lapidillum*, or the extracting *Forceps*. All the Instruments may be seen in *Hildanus's* particular Treatise of the Stone in the Bladder.

3. The *dead Fœtus*, the Head of which is to be laid hold on by a Hook, and thus the *Fœtus* is to be brought away entire, or in pieces, being cut one part after another. *Hildanus* relates the manner of extracting *Mole*, practised by himself successfully.

4. The *Secundines*, or *Uterine Placenta*; this, by the means of the Navel-string, the Hand only immittet into the *Uterus*, is to be leisurely separated and brought away.

5. *Teeth*, which are to be extracted

³ Vid. Hild, Cent. 6. Obs. 56. & lib. de thet. Ves. cap. 26. ⁴ Cent. 11. Obs. 52.

by *Forceps* of various kinds, such as are describ'd by Authors'; but there is scarce any one who has not invented something peculiar to himself. 6. *Little Bits of the Skull* in that Species of a Wound, which is call'd *σφλασις*, or with a Fracture; and by *Aegineta ἐκπίσσημα*, i. e. when the *Cranium* is broken into many Pieces, so that the separated Bones press upon the Membrane of the Brain'. The Instruments are to be seen in *Ambr. Parey*'. 7. I add to this Class *extravasated Blood*, or any other Liquid converted into *Pus*, being collected either in the *Abdomen*, or Breast; which, with little Disturbance to the Patient (if a Wound of those Parts happens) we evacuate by the means of a Syringe.

THOSE noxious things which lodge in our Bodies, and were sent from without, are, 1. *Darts*, or *Bullets*. All Darts, says *Celsus*⁵, are to be ex-

⁵ Vid. Par. lib. 17. cap. 27. Gab. Ferrar. Sylv. Chir. lib. 2. Fig. 34, 35, 36, 37. Scultet. Tab. 10. Fig. 3, 4, 5, 6, 7, 8.

⁶ Hild. Cent. 5. Obs. 23.

⁷ Lib. 10. cap. 6.

⁸ Lib. 7. cap. 4.

tracted by that way through which they enter'd, or by that towards which they tended. In the first Case, the way by which it is to return, is made by it self; in the last, by the Knife, whereby we cut the Flesh opposed to the Point of the Dart. These Instruments are those, which are called by a particular Name, βελῆλκοι, or those belonging to the Business of Darts: some are of Steel, sharp pointed like a *Terebra*, or Piercer; others made hollow like a Spoon.
 2. *Fish-Bones*, or any little Bones sticking in the Gullet; to the removing which, the Instrument ἀκαιοθαβόλον, so call'd by *Paulus Aegineta*, is serviceable; or that of *Gualtherus Riff* mention'd by *Hildanus*²; and both of them are extant in *Scultetus*³; likewise another you may see in *Hildanus*⁴; or a Sponge tied very fast to the Extremity of a thin flexible Piece of *Whalebone*, and so introduc'd into the Gullet. 3. *Little Stones*, Me-

¹ Hild. lib. 1. Obs. 88. Par. lib. 11. Scultetus Tab. 15, & 16. ² Cent. 1. Obs. 36.

³ Tab. 10. Fig. 1, & 2.

⁴ Cent. 6. Obs. 34.

allick Bodies, Fruits and Seeds of
 Plants; also *Animalcules* creeping in-
 to the Passage of the Ear. Some-
 times these things are to be shaken
 out, by the Concussion of the Part,
 and the Declivity of its Situation;
 sometimes an *Auriscalpium* is made
 use of; or a *Probe* rolled round with
 lint, and dipped in *Turpentine*⁵.
 Little *Straws*, small Shot, or any
 other *Sordes* that may happen into
 wounded Parts, to the removing of
 which the *Volsella* is useful⁶; or
 Cotton, or fine Linen. 5. *Iron In-*
struments, as a Piece of a Knife, ac-
 cording to *Hildanus*, Cent. 1. Obs. 62.
 Cent. 3. Obs. 24.

§. 17. The fourth Species is *Aphæ-* 4. *Aphæ-*
resis, which may be defin'd, an *Ab-* ^{resis.}
resis of whatever is superfluous. And
 this is done either *occultly*, or *mani-*
festly. *Friction* apply'd to the Body,
 promotes *Perspiration insensibly*; such

⁵ Vid. Hild. Cent. 1. Obs. 4, 5, 6.

⁶ Vid. Hild. Cent. 2. Obs. 13. Cent. 4.
 Obs. 17. Cent. 5. Obs. 21. Cent. 6. Obs. 78.
 Item de Vuln. Sclap. graviss. p. m. 947.

as is used in Baths. The Instruments of Chafing are strong coarse Linen; and Flesh-Brushes, which *Merrcurialis* describes ¹. Also to this Head belongs violent *Extension* ²: and here may be related the Account of *Cupping-Glasses without Scarification*, which translates Matter from one Part to another, as *Hildanus* ³, and the urn exceptionably great *Hippocrates* ⁴, attest. But of these things we have treated in §. 4. The Manner of applying a Cupping-Instrument is various; some make use of kindled Tow, others of a Piece of Wax-Candle, &c. Formerly in *Agypt*, and now in *Germany*, they draw out the Air by Suction through a little Hole which afterwards is to be stopp'd by a Piece of Wax, or the like Matter: In Imitation of this, I usually take a Copper Tube, whose inferior Circle is about the Breadth of half

¹ Art. Gymnast. l. i. c. 8.

² Vid. Hild. Cent. 1. Obs. 79.

³ Cent. 1. Obs. 80.

⁴ Lib. de Medico, §. 6. Lib. de Loc. in hoc mine, §. 20, & 24. Lib. 2. de Morb. §. 200. Lib. de Affect. §. 4. Aph. 50. §. 5.

a Crown; and being apply'd to the Flesh, by sucking very powerfully, it elevates the Skin to a considerable degree. [Now in England we affix Cupping-Glasses, by the means of a small Air-Pump. The Glass is commonly in the Shape of a Bell, and has at its bottom a small Perforation, which is armed on the outside with a male Skrew, and cover'd by a Membrane, which serves as a Valve, by permitting, when the Glass is fixed on any Part, the internal Air to be drawn out, but not re-enter. The pump is a brass Tube, about the Bigness of a common Syringe, at one end has a Female Skrew, adapted to the male one of the Cupping-Glass. In its Cavity is a movable Embolum, furnish'd with a Valve, as in the Glass. In order to fix it on any Part, having first skrew'd on the Tube, we set its Mouth on the assign'd Place, and by pressing, and then elevating the Embolum, we exhaust the Air contain'd in the Cavity of the Cylinder: for, by pressing, the Air in the Tube escapes by means of the Valve; but, in Elevation, it is hinder'd by the same Valve from returning. In the mean while, the Pressure on the Air within the Glass

D 5

being

being thus remov'd, that by its Elasticity rushes into the Tube. By repeating this Process three or four times, the Air in the Glass will become exceedingly rare; insomuch that the Weight of the incumbent Atmosphere being the same, the Glass, by that Pressure, is fastned very firmly, and the subjacent Skin will be very sensibly elevated into the Cupping-Glass.] Superfluous Matter may likewise be taken away from the Body manifestly, or so as it may be very apparent to the Eye; and this is done, 1. By these Cupping-Glasses with Scarification. They are often substituted in the room of Venesection, and very frequently used for extracting Poison communicated to any Part by a *venenate* Bite of an Animal^s. 2. By a Knife that is either *strait*; or *crooked*, that it may comprehend the greatest Part of the Circumference of any Tumour. Such as these we use in taking off a cancerated Breast, and all large Tumours, either those that are pendulous, or have a larger Basis⁶. By

^s Vid. Severin. de Vipera, p. 3. c. 5.

⁶ Vid. Hildan. Cent. 6. Obs. 16.

the same means also the *Penis* is to be cut off, according to *Hildanus* ¹, and the *Prepuce* ². Sometimes also a *hot Knife* is to be used, as the same Author says ³. Likewise a *peculiar Instrument* for this purpose may be seen in *Hildanus* ⁴. 3. By *Scissars*, which are used in the cutting off a *Testicle* that is putrid, or any ways affected with a *Cancer*, after a *Ligature* being made of the *Seminal Vessels*; also by these a cancerated Part of the *Tongue* or *Lips* is commo-
niously remov'd. 4. By *excisory Forceps*, and thus may the *Extremities* of *Bones* and *Cartilages* be cut off; and thus also a *Polypus* may be separated from the spongy *Bones* of the *Nose*, but it is rather to be extracted entire. In corrupted or superfluous *Fingers*, *Parey* advises ⁵ the use of this *Instrument*; but *Hildanus* ⁶ prescribes little *Saws* instead

¹ Cent. 3. Obs. 88. ² Cent. 4. Obs. 11.
³ Cent. 2. Obs. 32. ⁴ Cent. 1. Obs. 1, 2.
⁵ Cent. 2. Obs. 79. Cent. 5. Obs. 27, 28.
⁶ Vid. Paræum, lib. 10. c. 6. & Scultet. Tab.
 Fig. 2. ⁷ Lib. 17. cap. 30.
 Lib. de Gangr. & Sphac. cap. 19.

thereof,

thereof, to avoid the Danger of breaking the Bone into Fragmentss.
 5. By *Ligatures*; as the supernumerary sixth Finger, or Warts may be taken away, by being tied round with a Thread, straiten'd every day, till at length they are depriv'd of their Nourishment, and fall off.
 By the like Means a *Fungus* growing in the Ear², and another also out of the Navel¹, were cured by *Hildanus*. 6. By an *expulsive Bandage* which expels Matter contain'd in any *Sinus*. 7. By a *great Saw*, which is used in amputating *sphacelated Members*²; unless any one had rather use an Instrument described by *Botallius* in Page 790 of the *Leyden Edition*. Its Form is thus: Two wooden Columns are to be fixed into a heavy Stock, each having a Groove on its Inside cut longitudinally. In the bottom Part of the Stock a broad Knife is to be fixed very firmly, with its Edg upwards, having the Edg of another Knife opposite to it, that

¹ Vid. Hild. Cent. 6. Obs. 79.

² Cent. 3. Obs. 11.

¹ Cent. 5. Obs. 62.

² Vid. Hildan. lib. de Gangr. c. 19.

may be moved through the Channel. When the Member is to be amputated, that superior Knife, either being loaded with Lead, or struck with a weighty Hammer, falls down and cuts through the Flesh and Bone together. *J. Regius* declares this Method to be very expeditious, without Pain, and to be perform'd in a moment, so as the Patient may imagine, that only a Spark of Fire fell upon his Limb.

§. 18. THE *fifth Species* of Operations is termed *Prosthesis*, or a supplying by Art what is deficient; and this has a place in Mutilations of the Limbs, and other Parts of the Body. Although this is but a Palliative, and therefore not so properly call'd a Chirurgical Operation; yet, since it conduces not a little to the Beauty of a human Body, and Art restores, as much as possible, the natural Defect, it belongs to Physick, and in particular, to that Branch of it call'd Surgery. Thus we supply the want of an Eye with a Glass or Golden one colour'd: and the loss of an Ear by thick Paper or Parchment painted; 5. *Prosthesis.*

painted; we repair the want of Nose by Silver Plates: and though we are not so happy as to imitate the famous *Taliacotius*, as *Hildanus* affirms of *Griffonius*; yet we can restore lost Teeth, if the Speech be deficient, by facitious ones of Ivory and we fix a Silver *Lamina* or Plate when a Portion of the Palate is eaten away ⁴. *Ambr. Parey*, in his twenty second Book, makes mention of a certain Person, who lost a large Portion of his Tongue; yet, by the Assistance of a wooden Instrument, which he kept in his Mouth, he could pronounce Words articulately. Thus likewise we use wooden Legs to walk with, and an Instrument, made of Iron, may be fixed to the Arm; by which, in defect of a Hand, its Use may be somewhat supply'd ⁵.

6. *Diorthosis*.

§. 19. THE *sixth* and *last Species* is call'd *Diorthosis*, by which all those Members, that, from the Birth or afterwards, have contracted an ill

³ Cent. 7. Obs. 31.

⁴ Vid. Hild. Cent. 2. Obs. 22.

⁵ Vid. *Paræum*, lib. 22. cap. 12.

onformation, are to be reduc'd to their natural Figure again, that they may be able to perform their proper Functions. *Hildanus* ⁶ gives a very remarkable Example of this kind. This Operation is always perform'd by Steel Instruments, such are those used about the *Thorax*, concerning which *Hildanus* and *Parey* are to be consulted ⁷. Or the *Boots* ⁸, by which the Bones are gradually to be forc'd into a contrary Bent; or are so carefully loos'd from themselves, as that Bone which was too much compressed before, is render'd free from Pressure; and is able to receive Nourishment more plentifully, and thereby encrease to its first Magnitude: a Demonstration of which is to be seen by inspecting any *Abbo'se Skeleton*. In the City of *Utrecht* there lives a famous *Scotch Artist*, who undertakes to cure ma-

⁶ Cent. 1. Obs. 83. & lib. de-Ichor. & Mercur. cap. 27.

⁷ Cent. 5. Obs. 67. & Par. lib. 23. c. 8.

⁸ Vid. *Hildan.* Cent. 5. Obs. 86. Cent. 6. Obs. 89, 90. & *Paræum*, lib. 23. cap. 11. & *Glysson.* de Rhachit. cap. 29.

ny Patients of this kind, who resort to him from distant Countries, and does to a Miracle rectify *distorted Feet, gibbous Spines, &c.* In this place I think may be ranked those Instruments call'd *Elevators*, whose Use is to raise Depressions of the Skull, that they may be reduc'd to their pristine State. Consult *Hildanus*, who has expressly treated of these things, *Cent. 2. Obs. 4, 5.*

The Second Part of the *First Section.*

*The Operations
applicative of
Medicines.*

§. 20. THESE things being finish'd, we come now to the Operations, which are also deservedly ranked among the Chirurgical ones, because the *Hand* does claim not the least Part in them. But in these Cures, manual Operation is subordinate, for the Diseases are such, as cannot be cured without Medicaments; as *Celsus* declares in the Preface of his fifth Book. But although the principal End depends upon the Virtue and Efficacy of simple or compound Medicines; yet since every

by one cannot apply these according to Art, and seeing a previous Practice is requir'd; hence it is, that these Operations obtain the Name of *Applicative of Medicaments*.

MEDICINES, which are apply'd to our Bodies by the means of the Hands, may be divided into *Natural* and *Artificial* ones. *First*, in the account of *Natural Medicines* occur *Leeches*⁹; and these, after they have disgorged a venomous sort of Quality, by being kept a few days in clear Water, are to be held between the Fingers and Thumb (being rolled in a piece of Linen or Lint, lest they slip away) and apply'd to the *Hæmorrhoid*, or other *Veins*: but it is necessary first of all to chafe the Part with a rough Cloth, or to dawb it with Pidgeon's Blood, or to make a small Puncture in it; for by these means they will fasten the better. They fall off when they are full of blood; but if you would take away a greater Quantity than they can contain, you must cut off their Tails,

⁹ Vid. Mouset. Theatr. Insect. lib. 2. cap. 41.
and

and then they will never be satisfi'd, but by being cherish'd with the Steam of warm Water, will suck perpetually, and as much Blood will flow out as you desire. When they have done their Business, they are not to be forc'd off, lest they leave behind them a sort of Sting that may be troublesome, but are to be disgusted by salt warm Ashes, or some such things, as may be seen in *Vitruvius*¹, and others. In the *second* place is to be mention'd *Actual Fire*. This is different, according to the Varieties of the Matter used; for one place it in Tow, another in kindled Coals, another in Parts of Plants, *Spanish Wax*, and in Pyramidal Pieces of Linen, according to *Prosper Alpinus*². Some use Gold or Silver, but what is most commonly approv'd is a hot Iron³. Likewise *Severinus*, in his *Chirurgia Spiritualis*, never yet publish'd, advises the use of the Flame it self

¹ Lib. 2. Chir. cap. 9. & Claudin. de ingreditur ad infirmos, lib. 2. c. 5.

² Lib. 3. c. 21. Medic. Ægypt.

³ Vid Severin. in Effic. Chir. lib. 1. Pyrotechnica p. 2. c. 1, 2, 3, 4, 5.

own through a Pipe. *Hippocrates's* twenty seventh *Aphorism*, in the sixth Book, and sixth *Aphorism* in the eighth Book, sufficiently prove the use of Fire to be very antient in Physick. It is apply'd to discuss, corroborate, concoct, to resist Putrefaction, to the opening Abscesses, and to induce an *Eschar* on any Part. The *Instruments* are of various Figures, but all of them call'd *Cauteries*; some are plain, others round, and some are curved, &c. Their Figures are to be found in *Albucasis*; and likewise in *Scultetus*⁴, and *Gabr. Arrara*⁵; but particularly describ'd by *Guido de Cauliaco*, in his seventh Treatise. Sometimes an actual Cautery is to be apply'd through a *Capula*, to prevent any Terror from the sight of it: this Method was invented by *Placentinus*, and describ'd by *Scultetus*⁶, after *Aquapendens* and *Landorpius*. When we undertake to use any sort of Cautery, we are to give particular care in defending the

⁴ Tab. 19. ⁵ Lib. 2. Tab. 28, 29, 30.

⁶ Tab. 1. Fig. 10.

neighbouring Parts, either by a *Lamina*, defensive Emplaister, or Liniment moisten'd in *Oxycrate*; and sometimes a hot Iron is transmitted through a *Copper Canula*, for the greater Safety of the adjoining Parts. The Degree and Manner of applying it is various, according to the nature of the Distemper, and the Part affected. In a *Sphacelus*, or Mortification, we cauterize more freely than in any other Case; in the soft Parts more sparingly, in moist Parts more liberally; in a Flux of Blood, or Carriage of a Bone, we reiterate the Operation till an *Eschar* is induc'd, or the Humidity of the Bone destroy'd.

2. Of Artificial Medicines.

MEDICAMENTS, which we call *Artificial*, are those which are prescrib'd by a Physician, and prepar'd by the Apothecary for immediate Use. They are Liquids or Solids: The *Liquids* are exhibited in the Form, 1. of an *Injection*, where we have occasion to inject any liquid Preparation into the more inward Parts of the Body. Thus an Injection is frequently made into the *Uterus* (which ἀπὸ τοῦ κλύζειν, from Washing)

ing

g, is call'd *κλύσις*, a *Clyster*) *Uterus*,
enis, and sinuous Ulcers. The In-
 strument is a Syringe, or a slender
 tube, to which is fasten'd a Blad-
 der: but Injections are to be admi-
 nister'd gradually, and, if into the
anus, the Patient must lie on the
 right Side. Sometimes also this O-
 peration is to be perform'd with Vio-
 lence, so as the injected Liquor may
 sh out the same way it enter'd,
 z. when any *Sordes* lurks within.

Of an *Instillation*, and this is less
 artificial than the preceding; but is
 perform'd in a threefold manner.
 The Liquor is either pour'd out by
 drops from a Vessel, having a nar-
 row Spout, or expressed from a wet
 sponge; or lastly, (which is very
 common amongst the *Italians*, as is
 plain from *Claudinus*, who calls it
collicidium ¹) the Liquor is to be dis-
 seminated by Drops, thro the Spout of
 a wooden Vessel, from a high Place,
 upon the Head, Stomach, Liver, or
 any other infirm Part. *Horace* ² takes
 notice of it, and speaks of those

¹ In Append. lib de Ingress. ad infirm. §. II.
² Epist. 15.

who submit to it, thus; *Qui Caput & Stomachum supponere fontibus audent* 3. Of a *Lotion*, or *Irrigation*, which is very much like to the former, unless with this difference, that after the Part is wash'd with the Liquor, a moisten'd Piece of Linen is apply'd to it: thus a Rag wet with *Oxycratus* is to be put around the Testicles in an Hæmorrhage of the Nose, according to *Hildanus* 4. It is call'd *Irrigation*, when we sprinkle Water or Drops of Vinegar upon the Face in a *Lypothymia*, or Swooning. 4. Of a *Fomentation*, which is sometimes used in the same manner as Lotions, and sometimes it is different, as when an Oily Liquor being inclosed in a Bladder, or a Bag filled with a dry Substance made warm, are apply'd to the Part. 5. Of a *Bath*, which is either *moist* or *dry*, and both sorts are either *total* or *partial*: in one the whole Body is immerged, in the other only a Part, or perhaps half of it; and from hence it is call'd

³ Vid. Hipp. Aph. 21, & 25. lib. 5. & *Baculum de Therm.* lib. 2. cap. 14.

⁴ Cent. 2. Obs. 45.

Semicupium: the Figures of which are decipher'd by *Heurnius*⁵, and *Severinus*⁶. Again, either of them is *Natural* or *Artificial*. The liquid natural Bath is made of Bath-Waters, but instead thereof are prescrib'd Decoctions of Herbs in common Water. The natural dry Bath consists of an Exhalation of warm Vapours rising from subterraneous Cavities; and an artificial one is made of kindled Coals, or Spirit of Wine: for thus, if the Patient be well cover'd with Clothes, he will sweat plentifully. 6. Of a *Suffumigation*, or *Vapour*, which, that either of them may be convey'd to the Part affected, the Exhalation is to be receiv'd by a Funnel, or the Patient is to sit on a perforated Stool or Chair. Any one may assist himself with the Smoak of Tobacco, to the provoking the *Annus*, by an Instrument lately invented in *England* by Mr. *Woodall* a Surgeon there, who has publish'd a Delineation of it; and after him it is

⁵ In Meth. ad Praxin. l. i. p. m. 45.

⁶ Pyrotechn. Chir. l. i. p. 3. c. 47.

decipher'd by *Bartholine* ⁷. 7. Of *Inunction*, which is perform'd by the Fingers, or a Sponge.

Of Solid
Medicines.

SOLID Medicines, whose manner of Application ought to be taken notice of here, may be comprehended under these Titles: 1. The *Insersion of Powders*; and this is done either by a Puff of Wind, as when we sprinkle Pepper on a relaxed *Uvula*, by the Instrument invented by *Hildanus* ⁸: or by a common Instrument made use of amongst *Goldsmiths*, [which they call a *Burras Pipe*, and] which is nothing else but a Copper Box, with a Spout, having Teeth like a Saw. Also we sprinkle restringent Powders on Tow, and apply to any Part of the Body. 2. The *Intrusion of Suppositories*, or *Pessaries*. 3. The *Applying of Emplaisters*, under which Head are comprehended *Spadrapa*, *Dropaces*, or *Picationes*, concerning which consult *Gorræus*. Also here belong *Vesicatories*. 4. The *Application of Potential Cauteries*; as when we apply to the Part an Em-

⁷ Cent. 6. Obs. 66.

⁸ Cent. 2. Obs. 21.

plaister,

to Chirurgery.

73

plaister, with a small Hole in the middle, upon which a Piece of Caustick is put, and upon this a Compress and Bandage: after an hour or two, the Caustick will be dissolv'd, and the Skin burnt and rendred insensible, which the Incision-Knife may penetrate easily without Pain.

SECTION the Second.

Part the First.

§. 1. **S**INCE, according to *Hippo-The Order*
crates's Advice, we ought to *of the Ope-*
reduce Theory to Practice, *i. e. con-* *rations.*
firm universal Precepts by particular
Examples; so we purpose to subjoin
the *Practice* distinctly, of the *Chirur-*
gical Method just now deliver'd: but
it will consist only of those Opera-
tions which occur most frequently in
the Medical Art, and in which most
of them follow successively, one af-
ter another. Herein we shall ob-
serve the Method and Order of the
celebrated *Fabricius ab Aquapendente*,
in his *Book of Chirurgical Operations*;
beginning with those of the Head,
and so descending in course to the
Limbs.

E

§. 2.

Of a Fontanel, or
Issue in the
Head.

§. 2. IN the first place occurs the making an *Issue in the Coronal Suture* and this is a Practice very common amongst the *Italians*, who fancy that the noxious Humours generated in the Head, and which thence flow to the inferior Parts of the Body, may be evacuated this way. What Truth there may be in this Opinion, has been shown by the most Learned *Schneider*¹. But if this Operation should be order'd, the Surgeon must find out the most commodious place of performing it by *Celsus's* Rule² whom we always find just and faithful. A Thread is to be drawn from the Nose to the Crown of the Head and another from the middle of one Ear to that of the other; in that place where the Threads cut one another, the Issue is to be made, by an actual Cautery invented by *Aquapendens*, and delineated by *Scultetus*³. After the hairy Scalp is burnt pretty deeply [as may be likewise done by the *Lunar Caustick*] the Separation of the

¹ Lib. 4. de Catarrhis, cap. 11.

² Lib. 2. c. 7.

³ Tab. 1. Fig. 1, 2.

Eschar is to be procur'd by *Ungt. Bala-*
nic. or fresh Butter ; and a Pea is to
 be put into the Cavity to keep it
 open, and the capital Bandage o-
 ver all.

§. 3. IN dangerous Wounds of *Of the*
 the Head, Physicians have oftentimes *Trepan.*
 recourse to an *Aperture of the Skull,*
 that, through a *Foramen* made in it,
 extravasated Blood or *Sanies* may be
 evacuated. Therefore, the Hair be-
 ing shaved off, an Incision is to be
 made into the Skin and *Pericranium*
 in a simple Line, or in the Form of
 Cross, or of a triangular Figure,
 always having regard to the Sutures
 and Temporal Muscles. The Teg-
 u-ments being remov'd, and the *Peri-*
cranium scraped off the Skull, with the
 nails, or by a *Spatula*, the Wound is
 to be filled with Lint sprinkled with
 stringent Powders, as well to co-
 ver the naked Bone, as to stop any
 flux of Blood. Thus much being
 done, you may, after a few hours,
 proceed to the Operation it self, by
 laying the Patient in a convenient
 posture, his Head being held steddily
 by a Servant, and his Ears stopped
 with

with Cotton, to prevent his hearing the Noise of the Instrument's grinding: then begin the Work with the *Male Trepan*, thereby to keep the Head of it from moving away, which it would otherwise do, and make different Incisions with the Teeth; but after the Trepan is taken sufficient Hold, the *Pin* is to be remov'd, to avoid any Danger from it, since we know some Skins are extremely thin. The Trepan is often to be taken out, during the operation, as well to prevent growing too hot, from the constant Motion (which we moderate by dipping it in Oil, Rose-water, or Milk) as to cleanse the Teeth of it [*with a little Brush*] and examine what Depth it has penetrated. When you find Blood in the Teeth of the Instrument, you may be assur'd it has passed through the first Table of the Skull, and is come to the *Diploe*, *Mediullium*: after which you must turn more circumspectly, lest you should wound the *Dura Mater*; and often try the Equality of the Perforation [*which, if it be not just, may be remedy'd by a dextrous bearing*]

Insti

[Instrument on the uneven Place] by a broad Probe, or the like. When you perceive the Piece of Bone, you are about to take away, is almost cut through, and begins to shake, you must attempt, by gentle means, to bring it away by the *Volsella*; which being done, there always remain, in the bottom of the Aperture, several little Asperities, which are to be paid off by the *Lenticular Instrument*. There are many, when this Operation is performing, who hold over the Patient's Head a hot Pan to counterpoise the Coldness of the Air; but in the Summer Season it is needless: and in Winter the Air will be warm enough by having a Fire in the Chamber; always observing to warm the Linen that is apply'd to the Wound. Upon the *Dura Mater* of the Brain there is to be poured a little warm Oil of Roses; and, that the *Sanies* may more commodiously come away, it is to be compressed by an Instrument call'd *percussorium* [or that Part of the above-mention'd Knife which resembles a Lenticle:] but in the mean time we must order the Patient to hold his Breath,

for by this means the Matter contain'd between the *Dura Mater* and *Cranium*, which lies deep, will be more easily evacuated. To deterge the Membrane, we use a Piece of fine Linen dipt in *Mel. Rosar.* and a little Spirit of Wine, gently introduced between the Skull and the *Dura Mater*: but a Thread must be passed through the middle of it, for drawing it out again in dressing the Wound. For the Cure of the cutaneous Wound, *digestive Medicines* are to be used; but to the *Exfoliation* of the Bone, we apply *Cephalic Powders*. During the whole time of the Cure, the Head is to be well covered'd with Cloths, that it may be defended from the cold Air. If the *Fissure* should be only *superficial*, the Integuments are to be remov'd, and the external Table of the *Cranium* is to be scraped away, till no Mark of the Fissure remains. The same I advise to be done in a *Contusion*, where the external Table is yet entire; but the *Meditullium*, being somewhat bruised by the Pressure, the Blood that flows from the Rupture of its small Arteries, is to be discussed by

Resolb

solvents. But to undertake the *Elevation* of any *Depressure* by the means of a *Cupping-Glass*, or *sticking* *emplasters*, as *Hildanus* ¹ persuades, is plainly ridiculous and trifling. To restore the *fractured Parts* of the *cranium* to their pristine Seats again, and thereby to free the *Membranes* from their *Pressure*, if they are not separated from the whole, it is necessary to make use of *Elevatory Instruments*. In the *Perforation of a Dart*, sometimes *Fragments* are to be taken out, the *Eminences* smoothed, and so sometimes *Terebration* is useful, especially in *ἔμμορσᾶ Hippocratica*, viz. when the Blow was in one Part, and the Fissure in another.

§. 4. WE are not to omit, in the *Of Hordeolum* next place, mentioning the *Hordeolum* ^{li in the} *or Chalazium* of the *Eyelids*; ^{Eye-lids.} (or who is able to distinguish these?) They are *small Tubercles*, of the *big-ness of a Barly-Corn*, generally of a *catomatus Quality*;] and are best cured by introducing a waxed Thread

through their *Basis* in a crucial Form, and thereby drawing them out, and cutting them round with the Point of a Knife, afterwards applying *Catrizing Medicines*. If it should be a *Meliceris*, or *Atheroma*, oftentimes it breaks without any Assistance; and then applying one or two Grains of *Troch. de Minio*, the Remains of the *Cystis* is brought away by Suppuration.

Of Couch-
ing a Cata-
ract.

§. 5. NEXT in order succeeds that nice and delicate Operation call'd, *Couching a Cataract*; which is a certain thin *Pellicle*, or *Membrane* such as we sometimes see upon Wine or Beer, and adheres to the internal Part of the *Uvea*, spreading over the *Pupil* to the *Chrystalline Humour*, and thereby hindring the Transmission of the Rays of Light. Where this has acquir'd a due Consistence, *i. e.* being neither too soft, nor too old and hard, it is to be depressed by the means of a *Needle*. Therefore, the Body being purged, in the Decrease of the Moon, then in a clear Day, the Patient is to be plac'd in a Chair, with his Face turn'd towards the
Light,

light, and the Surgeon sitting directly before, but somewhat higher than him, a Servant behind keeping his Head firm and immovable. All things being dispos'd in this manner, the Patient's sound Eye is to be bound up; and after having humected the affected one with the Vapour of macerated *Fennel*, and chafing it a little with the Fingers, he is to turn it towards the Nose; then the Needle, being first run thro a woollen Cloth, to make it warm (using the left Hand to the right Eye, and so on the contrary) is to be boldly run thro the *Membrana Conjunctiva*, within the breadth of a Crown from the *Iris*, gradually penetrating, and, as it were, boring its way till it arrives under the *Cornea*. When the Needle has penetrated into the empty Space, one moderately skill'd in the Matter may do the Business; for there is nothing to hinder his Pressing. Then the Needle is to be inclin'd to the *Cataract*, which, with the Point of it, is to be separated leisurely from the Edge of the *Uvea*, and gather'd about, by gently turning the Needle, and afterwards depressed below the

Pupil, towards the *external Angle* of the Eye, and to be so pressed upon till it sticks there. The Operation being thus perform'd, the Needle is to be gently drawn out, and the *White* of an Egg curdled with *Allum* to restrain the *Inflammation*, is to be apply'd between two fine Rags; and over this, a Compress and Bandage. After thus much, the Work is completed by Rest, Abstinence, liquors and cooling Diet.

Of a *Fistula Lachrymalis*.

§. 6. ABOUT the Region of the Eyes, we meet with a Distemper which is call'd *Ægylops*, or *Fistula Lachrymalis*; because it affects the *Caruncle*, seated in the *greater Angle of the Eye*. If, after an *Inflammation* of the Part, there is *Pus* collected and lodged for some time, so as the Sides become callous, and the subjacent Bone affected with a *Caries*; the *Callosity* is to be remov'd, and the corrupted Bone to be exfoliated by the means of an actual Cautery, introduced thro a *Canula* delineated in *Dur. Scacch*¹. But when the Bone is

¹ Subsid. Med. lib. 3. c. 2.

not foul, the Cure may be more easily accomplish'd by *Astringent Medicines*, such as are describ'd by the famous *Bartholine*²: and that they may be the lesser detain'd upon the affected Part, *Aquapendens* has invented a convenient Instrument, whose Figure may be seen in *Scultetus*³.

§. 7. THAT Surgery is excellent, *Of Squint-Eyes.* and without Pain, which corrects the *Squint-Eyes* of Infants. *Aegineta*⁴ has deliver'd the *Method of Cure*, and after him, *Parey*⁵ has decipher'd it; viz. by keeping upon the Face a *Mask* with two Holes in it, opposite to the Eyes; which will accustom the Child to see thro these Holes, and the Eye will thereby acquire a Habit of beholding Objects in a right Line. [*Perhaps the Cause of many Squint-Eyes is a wrong Position of the Optick Nerve and Retina; and in such a Case, this, or hardly any other Method, will be found available.*]

² Cent. 5. Obs. 84.

³ Tab. 8. Fig. 12.

⁴ Lib. 3. c. 22.

⁵ Lib. 23. c. 1.

Of a Polypus.

§. 8. A *POLYPUS* is a fungous Excrecence, form'd in the Cavity of the Nose, inducing a Difficulty of Speech, as well as Respiration. This is not to be remov'd by Medicines, which are only troublesom, but by Surgery; as *Ful. Caesar Arantius* teaches⁶: which is practis'd very commodiously by an Instrument, whose Figure may be seen in *M. A. Severinus*⁷, and in *Scultetus*⁸. *Aquapendens* boasts very much of the Invention of this Instrument, but *Severinus* proves it to be of far more antient Original. However, it may be improv'd by adding, in the Concavity of the superior Part, two or three square sharp Teeth, that it may lay hold the more firmly. After the *Polypus* is extracted by this *Forceps*, the Remains are to be cauteriz'd by an actual Cautey, transmitted through a *Canula*. [But when the Root is brought away, as is frequently done, a little *Acet. distillat. snuffed up* is sufficient.]

⁶ Lib. de. Tum. p. n. cap. 21.

⁷ De Med. Eff. p. 115.

⁸ Tab. 12. Fig. 1, 2.

§. 9. CHIRURGERY is also *Of Hare-*
practised upon the *Lip*, not only for *Lips.*
the sake of the Beauty of the Face,
but likewise to procure an Articulate
Speech. It oftentimes happens, that
there is a *Fissure* or *Division* in the
Upper Lip, more especially; (such as
we see in Hares, from whence they
are call'd *Hare-Lips*) and that is ei-
ther natural, when the Child is born
with it, or is caused afterwards by
an accidental Wound. It is not dif-
ficult to remedy this Defect, if you
can bring the divided Parts to a mu-
tual Contact, and preserve them so
together, that Nature may do her
part in conglutinating the same. But
in performing this Operation, you
must first of all cut off the Callosity
of the Sides with your Scissars; and
if there be too great Loss of Sub-
stance, the Lip is to be separated
from the *Jaw-Bone*; whereby it may
be more largely extended, and con-
sequently the *Cleft* better filled up.
This being done, you are to pass
thro the Lips one, two, or three
Needles, and leave them in the Flesh,
often rolling Thread around them
above

above and below, as *Ambr. Parey* has delineated². Also Compresses and Bolsters are to be plac'd on each Cheek, that the carnous Fibres which are generated *de novo*, being very tender, may be less liable to a Rupture, and remain agglutinated, till they become strong, and the opposite Parts are grown into one another; which will come to pass about the end of a Fortnight, at which time the Needles are to be taken out. The only Danger of Needles is in Children, when from the Softness of their Flesh, they cut thro the whole Lip, and render your Endeavours of no effect; and this likewise happens from a Plenty of Snivel, continually descending from the Nose, which rots the Thread, and renders the new Flesh too moist, wherefore the Lips cannot be kept together as they should be: for which reason, in this case you would do well to fix a thin Plate of Lead, or little Piece of Leather, such as is used in the Soles of Shoes, to the Ends of the Needles on

² Fig. 2. c. 26.

each side; also an *Emplaster* may be placed assant, that the Moisture may flow over it. Sometimes it happens that not only the Upper Lip, but also all the superior Part of the Palate, even that Portion of the Bone which makes the Roof of the Mouth, is affected, by adhering to the *Septum Narium*. Tho this Case is difficult, its Cure differs not from the former; unless that we must separate the Osseous Particle from the *Septum Narium*, by an Excisory *Forceps*, describ'd in *Scultetus*, Tab. 12. Fig. 4.

§. 10. AMONGST the Chirurgical Business of the Lips, *Aquapendens* makes mention of that which is practis'd on the Lip, when a Cancer hath infested it. Altho in this Case there is no Operation perform'd, that is different from what is exercised upon other cancerous Parts, viz. the Extirpation of the Malady with the Part affected; yet I would caution young Men, not to use the Method of *Aquapendens*, which is to extirpate the Part by a Piece of Silver, or Wood made sharp, and dipt in *Aqua Fortis*: for a Cancer will by this

this means be irritated to a dangerous degree.

A Contrivance to convey Liquids into the Throat.

§. 11. AMONGST the Operations of the Teeth, the same Author ranks the manner of *dietering* such Patients, whose Jaws are so fixed together, that their Mouth cannot be open'd. This Inconveniency he remedies by a *Pipe*, like a Funnel, but somewhat recurved; the small end of which is to be put into the Mouth, whilst the liquid Sustenance is pour'd in at the other: but lest it should rush too violently into the Gullet, it must be hinder'd by a *Cock*, which *Aquapendens* does not seem to take notice of. This Contrivance is very convenient; but to introduce the Pipe into the Palate by the Nostrils, seems very absurd; especially since there is always, about the hindermost Teeth, a Space sufficient to admit the Instrument. See *Scultet. Tab. 10. Fig. 5.*

Of remedy-ing Tongue-tied Children.

§. 12. THE *Tongue* is also an Object of Surgery, which is exercised upon it in cutting the *Ligament* that ties it down. But young Practitioners should always have in their Minds

Minds the Advice of *Aquapendens*, who cautions against the rash undertaking this Operation, because if wrong perform'd, it not only oftentimes induces the troublesom Symptoms mention'd by *Hildanus* ¹, but also a continual Salivation, by wounding the Extremities of the Salival Ducts, as *Riolan* affirms ². Moreover, *Aquapendens* assures us, that in a hundred thousand Children, scarce one of them is born with such a Ligament as requires the Operation; yet we see too many ignorant Women run to the Surgeons: but the Midwives are the most dangerous Persons of all, who tear away, with their Nails, the *Bridle* which Nature has bestow'd upon this Part.

§. 13. NOT only a common, but *easy* Operation is perform'd upon a *relaxed Uvula*. It is raised up again, *Universals* being premised, by blowing on it, thro the *Uvula-Spoon*, *Astringent Powders*; or sometimes those that stimulate, as *Pepper*, *Burnt Allum*,

Of the falling down of the Uvula.

¹ Cent. 3. Obs. 28.

² Lib. 4. Anthropol. cap. 10.

Balaustines, &c. But where it becomes putrid, it is to be held by the *Volsella*, and cut off with a Pair of Scissars. Also sometimes it must be cauteriz'd by a hot Iron introduc'd thro a *Canula*.

Of the Ex-
cision of
the Ton-
sills.

§. 14. IT has been often matter of Admiration to me, that the ancient Physicians dare cut out the *Tonsills*, being indurated after an Inflammation, as *Celsus*¹ makes mention of. For my part, I must declare I could never think the Excision of these Parts to be safe, because they are of great Necessity in the Body, and are interwoven with Nerves, and Branches of the *Carotid Arteries*; but what is more, *Aquapendens* is of the same Opinion. *M. A. Severinus*² is for extirpating by Excision: *The Tonsills*, says he, frequently grow out into unseemly Eminences, by a thick viscous Humour, either proceeding from a Venereal Distemper, or a Rheumatism: such are the *Mariscæ*, or Fig-like Tumours. Altho I have not hitherto

¹ Lib. 7. cap. 12.

² Pyrotechn. Chir. lib. 2. cap. 64.

seen this Case, yet I shall relate the Manner of performing it, for the sake of Tyroes in the Art. The Tongue being depressed, the Gland is to be elevated by a little Hook, and cut out by a crooked Knife; and sometimes it is to be cauteriz'd by a hot Iron. [*Notwithstanding the Author's Fears, I have seen this Operation of Excision perform'd with Success, in St. Thomas's Hospital, according to the Manner deliver'd by him.*]

§. 15. WHEN a Thorn, little *Of Extra-*
 Bone, or any other such thing ad-*neous Bo-*
 heres to the Jaws, or Gullet, Chirur-*dies stick-*
 gery brings Relief, by removing the *ing in the*
 Cause with a long *Volsella*, according *Jaws or*
 to *Paulus*; which may succeed when *Gullet.*
 we can discern the Place where it
 lies: but if the Cause sticks deeper
 in the Gullet, we shall do best to in-
 troduce a Piece of *Spunge*, tied very
 fast to a thin *Whale-Bone*, and drawn
 to and fro very often. *Hildanus* has
 another Instrument, which serves to
 thrust down, at once, more solid Bo-

dies towards the *Ventricle* or *Stomach*.
Vid. Cent. 6. Obs. 34.

Of noxious
Bodies fall-
ling into
the Ear.

§. 16. CHIRURGERY also be-
longs to the Ears, and is chiefly em-
ploy'd about the *Meatus Auditorius*.
This is sometimes obstructed by *Ear-
Wax*, which may be extracted by an
Auriscalpium; or brought away by
injecting warm Water, &c. Some-
times a *Membrane* shuts the external
Passage, which is to be perforated;
and afterwards *cicatrizing Medicines*
are to be apply'd. It also oftentimes
happens, that a *Cherry-stone*, *Pea*, or
the like, falls into the Ears, which
may be taken out by a *Spoon-like In-
strument*. But lastly, if Insects should
creep in, they are to be killed by in-
jecting a great Quantity of *Liquids*;
or to be extracted by a *Sponge* dipped
in *Turpentine*.

Of Bron-
chotomy.

§. 17. NEXT in order comes the
Operation of *Bronchotomy*, which the
celebrated *Renatus Moreau* teaches me
to write instead of *Laryngotomy*: but
what shall I say of it? since so very
few have been courageous enough to
put it in practice, on account either
of

of the Danger, want of Opportunity, or being deter'd by the Friends of the Patients; and therefore *Aquapendens* calls it by that barbarous Term *Subscanatio*. But, as *Celsus* says, it is better to try a hazardous Remedy, than none at all; and I am persuaded, it ought to be practised in extreme Necessity; especially when we have Examples of those, on whom this Operation has succeeded well, as the above-mention'd *Moreau* testifies, in a Letter to the famous *Bartholine*. Besides, in this Case there is no reason to fear hurting the noble Parts, or greater Vessels. And lastly, the famous *Tulpius* ¹ assures us, Wounds of this Part heal very soon. The Manner of performing the Operation is thus: The Patient is to be plac'd in a Seat, with his Head reclin'd backwards, as much as is possible, without danger of Suffocation; and the Servant standing behind, must take up the Skin of the fore part of the Neck, whilst the Surgeon makes a Longitudinal Incision of it, together

with the subjacent Muscles, from the Region of the *Aspera Arteria*, near the *Scrobiculum Juguli*; and then divide the Space between the Cartilages, with a broad Launcet, and put into the Orifice a Silver Canal, winged, lest it slip in too far, and a little crooked at the end, directing to the Lungs. By this way the Loss of Respiration is supply'd, till the Inflammation is discuss'd or brought to Suppuration, or a Liberty of breathing thro the Jaws is recover'd again.

Of a Paracentesis of the Thorax.

§. 18. IN the *Thorax* occurs the most antient, and now also a very common Operation in Surgery; which is call'd by the *Greeks Paracentesis*, and may be defin'd, an artificial Wound penetrating into the Cavity of the *Thorax*. It is to be perform'd when Blood, Water, or *Pus* are contain'd in either side of the Breast; which, by their remaining there, not only make an uneasy Pressure upon the *Diaphragma*, but also corrupt the neighbouring Parts, and thereby bring Danger of Life. Before all things we are to be well assur'd of the Side affected, which may be known,

known, as well from the Heat and Pain, as from a sense of Weight in it; which the Patient will feel to slide upon the *Mediaſtinum*, if he lies upon the ſound Side. In the next place, you are to make an exact Deſignation of the *Place* of Inciſion; and this is accurately done by the famous *Aquapendens*, in his Book of *Chirurgical Operations*, who deſerves well to be conſulted. In ſhort then, we declare the Apertion is to be made in that Space, which lies between the fourth and fifth Rib, reckoning from the ſpurious or inferior ones. But if any one ſhould urge, that *Hippocrates* 'advizes the Inciſion to be made between the third from the laſt Rib; I answer, that our Meaning is the ſame: for *Hippocrates* began to number, as we almoſt always are wont to do in fleſhy Subjects, from the eleventh, which is taken for the firſt; when the twelfth is ſo cover'd with muſculous Fleſh, as it can ſcarce be perceiv'd by the Touch. Moreover, it is neceſſary

to be assur'd of the *Space* you have: for if Incision be made towards the Back, the Thickness of the Muscles, the Multitude of Tendons, and the Nerves coming out from the Spine make it prove dangerous: and again, if Section be perform'd towards the Breast, we fear hurting the Diaphragm; or if we avoid that, it is doubtful whether we shall be able to purge out the Matter commodiously on account of the Ascent of the Diaphragm that way. That you may avoid these Dangers, take a Thread, and measure from the *Cartilago Ensiformis* to the Points of the *Vertebrae* of the Spine; then divide this whole Space into three Parts, and in that Place where two Thirds of the Thread touch, beginning from the *Sternum*, you must perform the *Paracentesis*. The *Instruments* in this Operation are a Knife, armed with Linen; with which, the Place being first mark'd with Ink, you may at once perforate the Skin, Muscles, and *Pleura*; or we apply a potential Cautery to divide the Skin, and prevent a Flux of Blood. Incision being thus perform'd, I would not of

fence

end against the 27th *Aphorism* of the Sixth Book, but, by introducing a winged *Canula*, evacuate the contain'd Matter gradually. But I must now acquaint my Readers, that this Operation is oftentimes perform'd, and nothing comes away; the Reason of which is, because the Matter does not fluctuate upon the Diaphragm, but is enclos'd in a *Cystis*, form'd by a Connection of the Lungs with the *Pleura*. Also I cannot but think this Operation more dangerous than is commonly imagin'd: for the Lungs always flow gently by the internal Superficies of the Breast, and on Expiration recede very little from the same; insomuch that the Lungs can scarce possibly escape the Edg of the Knife; besides, the *Pus* cannot without difficulty come away, but if it should discharge it self, I must say it may probably come from the very Lungs, after the wounding their *Tunic*: which is the Cause, why this Operation so rarely succeeds, but very often the Patient dies a little after it.

Of extirpa-
ting Can-
cers, &c.

§. 19. WOMEN are afflicted ve-
ry frequently with a *Cancer* of the
Breast, which is sometimes *occult*
and sometimes *ulcerated* or *manifest*.
Moreover, sometimes the Malady im-
fests only a Part, and sometimes the
whole Breast; nay sometimes it
creeps further, and occupies the
Glands in the Arm-pits. You must
forbear handling this Distemper, or
attempting to cure it by Medicines;
for Experience has sufficiently evinced
the Folly and Danger of such a
Method. In this Case, says *Aqua*
pendens, there is no other Cure to be
had, but what takes away the Part
with the Disease. I cannot sufficiently
wonder, that he, so learned a
Man, and versed in such abundance
of Practice, should only once have
seen a Breast cured by Abscision, and
that perform'd by another Surgeon;
when now amongst us, scarce any O-
peration is more common. Also he
is too fearful of the Pain, and the
Flux of Blood; when the first is on-
ly momentary, and the second of no
bad consequence; since only very
small Arteries are cut asunder. To

per-

perform this Operation, first, two Needles must convey a strong Thread thro the *Basis* of the Breast in a crucial Form; or the Breast may be held fast by a Pair of *Forceps*, made of two half Crescents; whilst with a sharp, straight and crooked Knife, beginning below, the whole Tumour is cut off, and separated from the rest of the Body: but this is to be done by those who are experienc'd in the use of such Knives, that the Operation may be perform'd by two or three Incisions at most. After this is done, the Vessels are not to be cauteriz'd, but the Blood is to be stopt by applying *stringent Medicines*. The Patient need not always be tormented with the painful use of the Needles; for sometimes the *Cancer* may be taken hold by the left Hand only, *viz.* when it is sufficiently movable. After this manner all sorts of *Tumours*, growing in any Part of the Body, may be taken off. What I said above in §. 21. that the cancerous part of a Lip might be very fitly remov'd by a Pair of Scissars, was because I had once seen such an Example; yet I shall add here, for the sake of

F 2

young

young Practitioners, an Observation of the most famous *Scultetus*; viz. that a Pair of Scissars are very inconvenient in an Operation of this nature, because that Instrument always leaves some of the Evil behind, from whence it comes to pass, that the Distemper revives again: which I declare to have seen twice in one Patient, being too little mindful of a Caution he had from his Master *Spigelius*, and which I have thought worthy to mention, out of regard to the Patients Lives, and the Reputation of the Surgeon. *Vid. Sect. tet. Obs. 33. ad Tab. 43.*

Of a Paracentesis in the Abdomen.

§. 20. AMONGST Authors mention is also made of a *Paracentesis* in the *Abdomen*, when it is distended with Water. There is oftentimes a Necessity for this Operation, when yet many dread the performing of it, either because they fear wounding the *Viscera*, which many times are so corrupted by the continual stay of the Water, that they cannot recover their pristine State; or because, after the Apertion, they cannot hinder a copious Efflux of the Water.

after

ter which, according to *Hippocra-*
s', Death usually follows. Never-
 theless it is to be consider'd, that
 Nature her self, who is not to be
 controul'd by any one, hints to us
 all those things that are convenient,
 and has pointed out to us this very
 Operation, when the Sick has often-
 times been reliev'd from an *Ascites*,
 and present Death, by opening the
 Navel rais'd into a Tumour. Altho
 the Navel is perforated with Diffi-
 culty, yet, where that is protuberant,
 no other Place is to be chosen: but
 when Nature does not mark out any
 particular Place, you are to make
 choice of that which is three [or four]
 Fingers breadth below the Navel, on
 the left Side of the *Abdomen*, and a-
 bout the same distance on the Side
 to avoid hurting the *Linea Alba*.]
 First of all, the Patient standing up-
 right, if there be but a small Quan-
 tity of Water; or kept sitting, or
 lying upon the Bed, when the *Abdo-*
men is full and tumid, the Place is
 to be diligently mark'd with Ink.
 Formerly this Operation was per-

^a Aphorism. 27. lib. 6.

form'd by a *Launcet*, not without danger of wounding the Intestines and afterwards a Silver *Canula* smooth and winged, exactly fitting the Orifice, was put in: but this being of difficult use, the Moderns have invented a *perforated Canula*, that contains a sharp Steel Instrument having a triangular Point in the Extremity of it, which may be seen delineated in *Barbette*¹; and by this Instrument the *Abdomen* is to be lessurely pierced, and when it comes into the Cavity, the Water immediately flows out thro the little holes which are on all Sides of the acuminate Extremity of the *Canula*: if you would hinder a too plentiful Flux of the Water, you may stop the *Canula* with a Silver Stylet, and so by taking it out suffer the Water to run again as you please. When you have occasion to repeat this Operation, you may either make a new Orifice, or open that which was before; a little Piece of sticking *Emplaister* being apply'd upon the Wound, is sufficient to secure it. [Every Writer of Surgery deters us from taking away all the contain'd Water

¹ Chir. Part. 1. cap. 15.

at one time; but I have seen it practised very frequently, and always without danger. I have assisted at the Operation, when five Gallons of Water have been taken away at once, from a Woman of about forty years old, and of a very lax Habit of Body, without any danger from Fainting: but care was taken to supply the wonted Pressure of the Water, upon the great Vessels, by large Compresses of Napkins, moisten'd in Spirit of Wine, and a Bandage of Rollers over all. When I was a Pupil to that judicious Surgeon, Mr. Fern, I have heard him say, that he took away the whole Quantity of Water, being about five Gallons, from a Gentlewoman who brought forth a healthy Child in the same year: and I have been assur'd since, that Mr. Fern was the first Surgeon who practised this Method in London.]

§. 21. IN the lower Region of *Of Litho-*
the Abdomen, comes now to be con-*tommy.*
sider'd a remarkable Operation of
Surgery, viz. the Extraction of the
Stone from the Bladder. The Manner
of performing this Operation is differ-
ent in Men and Women; as also on
Children or Adults. Generally, Au-

thors have propos'd three Places, by which the Stone may be brought away viz. 1. Thro the very Orifice of the Bladder, as it is in Women; which way *Prosper Alpinus*¹ says he saw practis'd in *Agypt* upon Men, by dilatins the *Urethra* with Wind. 2. By that Part of the *Hypogastrium*, which, in a large Acceptation of the Word, we call *Pubes*: and *Rouffetus*² endeavour'd to prove this Place very convenient and preferable to any other, by many Arguments, after he had heard that *Petrus Franco* succeeded once very happily in it; who yet himself had no Opinion of this Method. 3. By the *Perinaum*, which is the common receiv'd Place by every one, either Men or Boys. When therefore we would undertake this Operation, Universals being premis'd, we order the Patient to leap often, that the Stone may incline downwards to the Neck of the Bladder. Then, if he is a *Boy*, we seat him upon the Lap of a strong Man; but, if he be an *Adult*, he is to be fixed

¹ Lib. 3. cap. 14.

² Lib. 3. de Part. Cæsar. cap. 7.

upon an inverted Seat, obliquely turning upwards, such as you may see Figures of in *Ambrose Parey* ¹, and *Sculdetus* ². In both Cases, the Legs, being drawn towards the Buttocks, are to be tied fast to the Hands in two places, *viz.* the Wrist with the Ankle, and the Arm with the Knee; but they are to be kept asunder by Assistants plac'd on each side. Then the *Litbotomist*, dipping his Fore-fingers of the left Hand into Oil, introduces them into the *Anus* of a Boy, lightly pressing the *Abdomen* with the right Hand, in order to direct the Stone under the *Os Pubis*, and bring it, as near as possible, to the *Perinaum*, so that oftentimes it may be felt thro the Skin by the By-standers. Thus much being done, he takes, with his right Hand, the *Bistoury*, armed with a Fillet half way, and directs it into the left Side of the Suture in the *Perinaum*, obliquely, thro the Skin and Muscles, till the Edg of the Knife touches the stone, which oftentimes breaks forth

¹ Lib. 17. cap. 44.

² Tab. 41.

and comes away of its own accord; but oftentimes there is occasion to enlarge the Incision, on account of the Greatness of the Stone, and then to extract it with the *Lapidillum*, delineated in *Hildanus* ¹. After this the Wound is to be bound up with proper Bandage, and the Patient kept quiet and undisturbed. In Men the *Greater Apparatus* is requir'd, for in them the Surgeon cannot reach the bottom of the Bladder, and consequently cannot bring the Stone down to the *Perinaum*. Therefore a *Catheter* is to be used, which is curved, so as it may pass into the Bladder, but with a *Sulcus* or *Furrow*, like a hall Canal ²; and the furrow'd Extremity of it is to be turned towards the *Perinaum*, that it may be a Guide and Direction to the Incision, by receiving the Edg of the *Bistoury* into its Channel. When the Knife has penetrated as far as the Bladder, and part of the *Catheter* appears in the Wound, then you are to direct into its *Sulcu*.

¹ Lib. de Lithot. Ves. cap. 14.

² Vid. Par. lib. 17. cap. 44. Pet. Franz. p. m. 127.

another Instrument, like a small Piercer, that is commonly made use of to taste Cheese with, which is call'd a *Conductor*¹: this being introduc'd into the Bladder, the *Catheter* is to be drawn out, and into the Cavity of the *Conductor* must be convey'd a *Dilator*; by the means of which the Wound is to be enlarg'd, so as the Stone may be laid hold of, and by the *extracting Forceps*, brought away either entire, or in pieces; viz. if the Stone is too big, or of too tender a Substance. The same Dressings and Baudage are used afterwards as in Children; and you may see, concerning all the Instruments in *Hildanus's Treatise of Lithotomy*. [*The Forceps used in St. Thomas's Hospital, London, are so contriv'd, as not to be quite shut, whereby there is no Danger of pinching the Bladder; perhaps it would not be amiss if those sharp Teeth within their Cavity were away, for they are apt to break a soft Stone into Fragments.*] In the Female sex, either in Maids or married Women, this

¹ Vid. Figuram apud Hild. lib. de Lith. cap. 6. & Franco, p. 127.

Operation may be performed with much less Trouble, and without Incision, or a great Loss of Blood; because the Orifice of their Bladder almost appears externally: therefore it is sufficient to introduce the *Catheter*, and within its Furrow the *Dilator*, and lastly to extract the Stone with the *Forceps*: yet sometimes, by reason of a large Stone, a small Incision is to be made in the Orifice of the Bladder, from which, as also from a too violent Dilatation, there is some Danger, lest the *Sphincter* should be hurt, and an involuntary Emission of Urine should ensue. After the Stone is extracted, 'tis proper to search gently, whether there may not be more remainings behind, and so to bring them out. But as to the Gravel and extravasated Blood, they are most conveniently brought away by *Syringing*, which may be done by the Assistance of a *Canula*, describ'd by *Parey* and *Hildanus*: for, by the means of this being left in the Wound, we have

Lib. 17. cap. 45. & Hild. lib. 6. cap. 21.
nott

not only an Opportunity of introducing the *Syringe*, but also there is a continual Emission of whatever remains hurtful to the Bladder.

W H A T E V E R has been said in the first Edition of this Book, upon the Faith and Authority of others, concerning the Dexterity of the *Lithotomist* of *Nimes* in *France*, named *Raoves* (*viz*, that he seated his Patients upon the Lap of a Servant; that he used no other Instrument besides the *Bistoury*; that he could hinder the Egrefs of the Urine by the Wound; that he could so order the Incision, that the Lips of the Cutaneous Wound, Muscular Flesh, and Bladder it self, should exactly answer one another; and that in the space of five or six Days he was able to heal up the Wound, so as the Patient might go abroad :) It has been since found, that all those things were merely Imposture. For in a certain Gentleman, he made a superficial Wound in the *Perinaeum*, and shew'd him a supposititious Stone, in the room of a true one, under which he labour'd, and which afterwards was extracted by another Surgeon. He was

was a *Lithotomist* of *Paris*, named *Collot*, descended from antient *Lithotomists*. and has cut several with Success in the City of *Amsterdam*; from a careful Observance of whose Operations, and from an intimate Acquaintance with him, *Noah Smallegange*, a diligent Surgeon of *Herculem* made so great a Proficiency, and became so dextrous, in this part of Surgery, that he performs it daily, not only in Infants of two Years old, but also in old Persons above sixty; whom, in a short time, he restores to Health again, although some have had nine, and others thirty Stones in the Bladder. But he always uses the great *Apparatus*, according to the Method of *Collot*, in Patients of all Ages; because he thinks, from the introducing the Fingers *in Ano*, and also by the violent Compression of the *Abdomen* (such as is practised usually in the old Method) not only violent Pains are excited, but sometimes an Inflammation and Gangrene of those Parts. This is attested by those who have been searched for the Stone, by intruding the Fingers *in Ano*; for they

loudly

loudly declare, neither the Incision, nor extracting the Stone, are so painful, as the Exploration of it: and how much more this may be said of Children, whose Parts are very narrow and tender, any one will easily conceive.

§. 22. IN the next place follows *Of the Extraction of a Stone out of the Urethra.* Sometimes a small Stone is thrust out of the Bladder into the Urethra, where it is wont to stick, so as to intercept the Passage of the Urine: in which case all Remedies are first to be prescrib'd, to bring it away without Incision. Amongst the Remedies appropriated to this Use, we must reckon *Diuretick* and *Emollient Potions*, together with a further Relaxation of the Parts by bathing in a *Semicupium*, which is describ'd by *Sculdetus*¹, but first of all by *Hildanus*². Afterwards succeeds the *Inflation* of the *Penis*, by blowing Wind into it with the Mouth, and tying that part of it which lies to-

¹ Obs. 66. ² Loc. Cit. cap. 26.

wards the Belly ; for thus the *Urethra* being dilated, admits a Passage to the Stone : and this *Prosper Alpinus* remembers to be a common Practice amongst the *Egyptians*. But altho' this Method may be practised with Success, where the Stones are small, yet when they are large, it is very improper, since the Urinary Passage in Men is not to be dilated, as the Mouth of the *Uterus* in Women, notwithstanding what *Alpinus* affirms to the contrary. The third Method of extracting a Stone in the *Urethra*, is by *Suction*, which *Alpinus*, in the Place already cited, delivers from a Relation of *Octavian Roveretus's*, and it is perform'd by drawing the Breath with the utmost Force : but *Hildannus*, in the above-mention'd Place, condemns this Method ; because he thinks the Urinary Passage is rather contracted by it : but *Alpinus* supposes it to be first of all distended with Wind. The fourth Manner of effecting this Work is *Ambrose Parey's*², who does it by breaking the Stone

¹ Lib. de eorundem Medicin. 3. cap. 14.

² Lib. 17. cap. 40.

with little Piercers. *Hildanus* has invented for this purpose a *Tenaculum*; and others a *Probe*, which in its Extremity is hollow'd like an *Ear-spoon*, of which Figures may be seen in *Scultetus*³. But the fifth and last Remedy is *Incision*; the Place of performing which is much disputed. *Parey* says it ought to be made on the side of the *Penis*, to avoid a *Fistula*, which might be occasion'd from the continual Passage of the Urine; and *Hildanus* makes choice of the inferior Part, lest the Nervous Bodies should be wounded, especially near the Root of the *Penis*, where it is cover'd by the *Musculi Acceleratores*, so call'd by *Riolan*⁴. If you should suspect a *Fistula's* succeeding, you must oblige the Patient to make Urine thro a Silver *Canula*, or one made of waxed Parchment; which is also useful to prevent the *Urethra's* growing too narrow and strait from the *Cicatrix*, or a *Caruncle* being generated within it. Incision being perform'd, the Stone is to be extracted, and *defensive Medicines* apply'd to the Yard.

³ Tab. 40. Fig. 4.

⁴ Vid. Tulp. 4. 34.

Of an im-
perforated
Glans, &c.

§. 23. UPON this Head also is to be mention'd the *imperforated Glans*, or when there is an Orifice of the *Urethra* in an uncommon Place. The first Case has been certainly very rare, for in such a Number of Writers no mention is made of any such Cure, *Wierus* only excepted in his *Observations*. But the Method of remedying this Defect seems to be such as is describ'd by *Albucasis*¹, viz. the perforating by a Launcet the Membrane which covers the *Foramen* of the *Glans*: but if this Malady should lie further in the *Urethra*, a *Canula* having within it a Needle, is to be made use of: which Artifice was deliver'd formerly by *Amatus Lusitanus*². Sometimes there is an Orifice at the Root of the *Penis*, near the *Scrotum*, thro which the Child makes Urine, and such Examples may be seen in *Tulpius*³, and *Horstius*⁴; and I saw the like Instance my self a few years since; which was cured by cutting up the Skin in the inferior part of the

¹ Lib. 2. cap. 55.

² Cent. 1. Cur. 23.

³ Lib. 4. Obs. 35.

⁴ Lib. 4. p. 2. Obs. 16.

Yard, and afterwards providing the Place with a Silver Channel, by sowing the Skin over it: for the Boy made Water continually through the Pipe, and there was reason to hope that an artificial Channel might be form'd, through which the Urine might afterwards run out. But I cannot think the Seed could be ejected this way into the *Uterus*: and much less do I agree with *Fabricius*, who believes Children might be gotten by him who has an Orifice of the *Urethra* under the *Glans*.

§. 24. OUT of the *Abdomen*, but of *Castration*.
 very near it, occurs an Operation, which is call'd *Castration*. Oftentimes one of the *Testicles* is affected with a *Cancer*, or corrupted from other Causes; and oftentimes a Dilatation of the Process of the *Peritoneum* is so great, in either side, that the Intestine slips through it into the *Scrotum*, and cannot sometimes be restor'd again by any other means, but by the Ablation of the Testicle. Therefore the Patient being fix'd upon a convenient Place, so as he cannot move himself, the Surgeon, the *Scrotum* being pinch'd

pinch'd up, makes an Incision in its lengthways, not far from the Flexure of the Thigh: then he must introduce his Fore-finger into the Orifice, and gently separate it (taking particular care of the Spermatick Vessels) from the *Elythroid* Membrane, which is a Continuation of the Process of the *Peritoneum*, until he comes to the Process it self: then taking hold of it with his Fingers, or the Instrument call'd *Castrator* (such as is delineated by *Joh Andr. à Cruce*; but *Scultetus* says it should be call'd *Retinaculum*, because it hinders the Intestines slipping out of the *Abdomen* into the Process of the *Peritoneum*, being now separated from the *Scrotum*, in order to be perforated with a Needle, tied fast with a Thread, and cut off with a Pair of Scissars².) He must keep it fast; and in the mean time find out with the Fingers the *Vasa Deferentia* and *Preparantia*, between which he must convey a Needle with Thread, and tie a double Knot, lest it slip away; then with a Pair of Scissars

¹ Fig. 2. Tab. 17.

² Tab. 39. Fig. 2, 3.

cut off the *Testicle*. But this Operation is not to be perform'd rashly or without Deliberation, because oftentimes, after the Intestine is reduc'd, by the means of a *Truss*, together with the Use of *internal and external astringent Medicines*, and a Regulation of Diet, the Patients are freed from a *Prolapsus Intestini*; nay many times, beyond Expectation, they are entirely cured, by the Benefit of Nature; as is testify'd by *Hildanus*¹, and others. If a *Hernia Aquosa* should be in the *Scrotum*, it does not require any other Operation, than what is perform'd in a Dropfy of the Belly. The *Scrotum* is to be perforated by the *Trocart*, spoken of in the Paragraph of a *Paracentesis* of the *Abdomen*, and the Water is to be let out, as is there advis'd, but always having a great regard to the *Testicle* and *Vessels*. If any one should be so curious as to take a little of this Water in a Spoon, and put in upon the Fire, he will find it turn to a perfect Jelly; which is a Sign, that it flow'd from the *Lymphatick Vessels*.

Of a *Hernia Aquosa*

Of *Hermaphrodites*.

§. 25. I HAD determin'd to say nothing of *Hermaphrodites*, but partly because *Fabricius* has wrote upom this Head, and also because I havee seen and examin'd an *Hermaphroditee* Girl about two years old, I could not well forbear adding a shortt Account: but he who desires too know more of this, may consult thee famous *Caspar Baubine's* particular Tract upon this Subject. When wee saw this Infant alive, we could nott judg what Sex it was of, for it had a *Penis* long enough for its Age, and also an external Image of a Woman's Privities. After opening the dead Body, we found a *Uterus*, *Testicles*, and *Fallopian Tubes*, together with a *Sinus* of Virginity; and in the superior Part of it was the Urinary Passage, so obscure, that when the Infant was alive it could not be discern'd. Moreover, the *Penis* had no Communication with the Bladder, and it being cut asunder, no *Urethra* appear'd, but only two nervous Bodies, which adher'd to the Bones of the *Pubes* by little Legs, like those of the *Clitoris* in Women. This, without doubt,

doubt, might have been cured, when it was very young, by cutting off the *Penis* as a superfluous Part, and afterwards treating the Wound as *Ætæna* directs, *lib. 6. cap. 69.*

§. 26. THERE are three Causes ^{Of Impedi-} which hinder Womens admitting ^{ment to Co-} Copulation either not at all, or im- ^{pulation.} perfectly; and these are to be remov'd by Chirurgical Means. The first is, when the Membrane, seated in the fore part of the *Vagina*, call'd *Hymen*, is too thick and tough, and without a Perforation; this is to be divided by Incision, and a *leaden Tent* put into the Orifice. The second cause is, when in the middle of the *Vagina* there sticks any Obstacle so near within as cannot be discern'd by the Eye; and this is to be cured by introducing a thin Bodkin or Probe, and after it a furrow'd *Catheter*: and lastly, by the means of that is to be directed in a Dilating Instrument, such as we use in *Lithotomy*) by which the Interstice is to be leisurely torn asunder, and partly by lacera-

Vid. Hildan. Cent. 3. Obs. 61.

ting, or partly by Dilatation, a Passage is laid open, which is to be kept so afterwards by *solid Tents of Bones* wrapt in Hogs Bladder, till the *Vagina* is fit to receive the *Penis*, and will admit the Seed to be thrown into the Neck of the *Uterus*. The third Cause is, when after a difficult Labour the Sides of the *Vagina* are join'd together¹; which Inconvenience is remedy'd by Incision, Dilatation, and *leaden Tents*, anointed with *Ungt. Diapompholigos*, or the like.

Of other
Obstacles to
Conception.

§. 27. WE ought not to forget enumerating, amongst Faults hindring Conception, the Repletion of the Cavity of the *Uterus*, with a viscid Humour, corrupted Seed, or extravasated Blood: all which are to be cured by washing the Cavity plentifully with any Liquor, by the means of a Syringe; and this is the Practice *Hippocrates* teaches, in *L. i. de Morb. Mul. text. 3.*

Of the Pro-
cidentia
Uteri.

§. 28. CONCERNING the falling out of the Womb, I must advert

¹ Vid. Hildan. Cent. 6. Obs. 67.

my Readers, that it seldom or never happens, that the Body of the Womb is protruded out of the *Vulva*; but if it should be so, this Distemper is not so frequent as is commonly believ'd. For the *Midwives*, and with them, a great Part of the *Physicians* are deceiv'd (which also *Roonhuysen*, a Surgeon of *Amsterdam*, confirms in his *Observations*) by the Rugosity of the *Vagina*; which, after a difficult labour, or from the Unskilfulness of the *Midwife*, being torn away from the subjacent Parts, is so relaxed by an Afflux of pituitous Humours (such as we oftentimes may observe in the lower Eye-lid) that it very frequently hangs out of the *Vulva* in a pyriform Figure; also the more it is protruded, the greater Narrowness appears in the Root of it: and therefore, when we are oblig'd to make a Division of it, by reason of a *Gangrene*, it is done with very little Danger.

§. 29. I MUST declare, I never *The Ex-*
saw a *dead Fœtus extracted*, and *traction of*
the Mother living: but I readily be- *a dead*
lieve *Aquapendens*, that it is difficult *Fœtus.*

G

and

and laborious; and also the celebrated *Rolfinckius*¹, who says he has performed it with Success, and always according to his Wish: *Hildanus* also assures us he has succeeded in more than forty times very happily. We learn from *Hippocrates*², who has written distinctly upon this Head, that the Operation is very antient. Since it oftentimes happens that unhappy Women hazard Death from the Want or Unskilfulness of Surgeons who are not well experienc'd in the Operation; I cannot sufficiently commend the Prudence of the *Magnificent Magistrate* of the Republick of *Amsterdam*, by whose Command the Surgeon has a publick Stipend, and is ready always to give Assistance to those in difficult Labours: in my time *Petrus Porgieterus* was there, whose Place *Henricus Roonhuyse* succeeded afterwards.

Of the *Cæsarean*
Birth.

§. 30. ALTHO *Aquapendens* does not mention the *Cæsarean*, or *Cæsonian*

¹ Anatom. Synthet. p. 182.

² Cent. 6. Obs. 64.

³ Lib. 1. de Morb. Mul. Text. 96.

to Chirurgery.

123

Birth, as *Riolan* chuses to call it; yet, for the sake of publick Good, we shall insert an Account of it, notwithstanding we are equally destitute of Experience in this Case. *Franciscus Rossetus* has publish'd a very large Treatise of this Matter; the chief Leads of which Book, *Sculetus* has recounted in the Explanation of Tab. 2. But those, who design to practise this Branch of Surgery, must understand, that there are three Conditions, in which the Child is extracted from the Womb: 1. When the *Fœtus* is dead, and the Mother lives. 2. When the Mother is dead, and the *Fœtus* lives. 3. When the Mother and *Fœtus* are both alive. In the first Case, it is not necessary to declare the Woman in eminent Danger, because if the *Fœtus* cannot be extracted by Surgery, yet Nature finds out other ways by the *Anus*, *Urethra*, Groin, &c. as may be seen *Langius*¹, and ² others. The second Case frequently happens, so

¹ Lib. 2. Epist. 39. ² Hildan. in Respons. ad Ring. Marsil. Cagnat. Var. Obs. 4. cap. 9. Musseum, Epist. 1.

that the *Embryo* (which is much to be lamented) is lost in *Darkness*, and perishes with the *Mother*; as the *Emperor* speaks'. But where lies the Blame? whether in the *Magistrate* without whose leave such Operations must not be undertaken; which before we can obtain, the *Occasion* is lost? or whether the Fault lies in the *Surgeons*, who perhaps dread the same Fate with *Vesalius*? whilst he was dissecting the *Thorax* of a certain Person, whom he thought was dead (some say he was making a Section in the Belly of an *Hysterical* Woman for the *Cæsarean Birth*) found the Heart palpitating; as *Melchior Adamus* relates in the *Life of Vesalius*, and *Jessenius* in *Præfat. in Exam. amen Vesalii ad Obs. Fallopii*. However it is, Incision must be made, if you would have Success, almost in the very moment in which the *Mother* expires; tho there may be hope so long as you find the *Infant* move and leaps about. It is only a common Error, that the *Child* lives by the *Mother's* Respiration, and therefore

ore it is in vain to keep open the Mother's Mouth, in hopes of giving Assistance to the Infant. The third Case is, when a living *Fœtus* is to be extracted by Incision, from a live Mother. This is the true *Cæsarean* Birth, upon which *Rossetus* wrote his whole Book: but what Danger attends this Operation, every one easily imagines. Altho it must be confess'd there oftentimes is a Necessity of making this Incision; yet there are so many Circumstances, and they so momentous, to be observ'd, that no one, in a doubtful Case, dare perform it thro fear of Calumny: for, what is worthy of notice, not one has been an Eye-witness of this Operation since *Rossetus*; only *Dorinius* excepted, who says in an Epistle to *Hildanus*, that he has cut into the *Uterus*, fallen into the Groin, and extracted an Infant well grown; but the Mother died of the Wound in three days: the like also *Rolfincius* declares to have happen'd to him, who therefore dissuades us from all Attempts to this Operation in a

live Woman. But I very much advise the *Cæsarean Section*, when it is certain the Infant has broken thro' its Inclosures into the very Cavity of the *Abdomen*, as many Histories prove from *Bartholine* ¹, and *Joh. Casp. Faru- cius* ², and such are very lately delineated by *Roonhuijse* ³. Truly I cannot only think a *Fœtus* may be conceived in the *Fallopian Tubes*, which is confirm'd by *Riolan* ⁴ in many remarkable Examples; but likewise must believe, in all those mention'd Cases, the *Fœtus* broke thro' the *Tubæ* when it was deny'd a Passage otherwise; and by an Incision in the Groin was taken out, as the famous *Dorini- gius* declares to have seen.

Of an im-
perforated
Anus.

§. 31. ACCORDING to the Example of *Aquapendens*, I have pierced with a Launcet an *imperforated Anus*, which was from the Birth, in that Place where the Mark appear'd. The *Excrements* did not come away

¹ Cent. 6. Obs. 92.

² Apud *Straussium*, p. m. 37.

³ *Observ. Chirurg.* p. 21.

⁴ *Anthr.* cap. 35.

which

which would have reliev'd the Infant, as happen'd to *Hildanus* ¹; therefore it was reasonable to suspect, that some fleshy Substance was generated higher in the *Intestinum Rectum*, as *Benivenius* thought ²: which, if we would cure, we must attempt it, by introducing a *Canula*, containing a short triangular Point of Steel, with which, when we come to the Obstacle, it is to be pierced through.

[§. 32. *IN this place occurs the Operation for a Fistula in Ano, which was omitted by our Author. A Fistula in Ano is a deep, callous, and sinuous Ulcer, near the Anus, and frequently penetrating the Intestinum Rectum. The Operation is either perform'd by Deligation or Incision: The former is well describ'd by Celsus ³, altho his Admirer and Imitator Aquapendens, in his Pentateuch, prefers the latter, which was the constant Practice in St. Thomas's Hospital, while I was there. Incision is perform'd by dividing the Sinuosity with a Pair of Probe-Scissars, or an*

¹ Cent. 1. Obs. 73.

² Cap. 30.

³ Lib. 7. cap. 4.

Instrument call'd by Galen, Syringotomus, which is delineated by Scultetus¹, having a Button at its end, and resembling a Sithe, from whence it is call'd by the Italians, Fallcette. The Method of Deligation is thus describ'd by Parey²: “ The Surgeon having intro-
 “ duc'd his Finger into the Anus of the
 “ Patient, let him direct in at the Ori-
 “ fice of the Fistula, a thick leaden
 “ Needle, drawing after it a Line,
 “ consisting of Thread and Horse-Hair
 “ interwoven; and then with his Finger,
 “ taking hold thereof, and bending it
 “ somewhat, draw it forth at the Fun-
 “ dament, together with the End of the
 “ Thread. After this, let him knitt
 “ the two ends of the Thread by a
 “ draw or loose Knot, in order that
 “ he may straiten it at his pleasure.
 “ But before he ties them, he must
 “ draw the Thread somewhat roughly
 “ towards him, as tho he meant to saw
 “ the Flesh asunder, that he may there-
 “ by cut the Fistula without any fear of
 “ an Hæmorrhage. If the Fistula
 “ does not penetrate the Intestine, he
 “ may boldly make way into it by a

¹ Tab. 14. Fig. 3. ² Lib. 13. cap. 23.

“ sharp

"*sharp Probe, &c.*" Thus far Parey.
Aquapendens, in Lib. de Operat. Chir-
urgic. p. 288. confesses ; " That at
first he was afraid to perforate the
Rectum ; but Necessity, and what
Hippocrates says in Lib. de Hæ-
morrhoidibus, tho you cut, sow, or
burn the Intestinum Rectum, there
is no Danger, encourag'd him to at-
tempt it, which he has often happily
perform'd." I shall moreover add
here a Method of Ligature, which was
always practis'd with great Success by
my Worthy and Ingenious Master,
Mr. Goodwin of Lynn-Regis. It is
perform'd by directing into the Fistula,
first a Probe, having at its Extremity
a small Knob, whereby it may receive
the Ligature ; then the middle Finger
of the left Hand, armed at its Extremity
with a silken Thread, having a loose
running Knot, is to be introduc'd into
the Anus of the Patient : when the Ope-
rator has thus done, he must guide the
Probe thro the Orifice of the Fistula,
and shift the Ligature over its mention'd
Protuberance ; and giving notice to his
Assistant, who, by immediately drawing
the outward Extremity of the Thread,
thereby fixes it upon the Probe, by
which

which it may be extracted thro the *Fistula* with much Ease. It is afterwards to be tied upon a small Compress of Linen, so as it may divide the enclosed Substance in a short time; to facilitate which, it will be convenient to snip the superficial Skin with a Pair of Probee Scissars. For this Operation it will not be amiss to consult *Les Operat. Chirurg. par Mons. Dionis.*]

Of a Seton
and Issues.

§. 33. WE are come at length to consider those *Chirurgical Operations* which are perform'd upon the *Limbs*. In treating of these, *Aquapendens* gives the first place to *Fonticles*, or *Issues*. A *Fonticle*, improperly call'd *Fontanel*, is an Artificial little Ulcer made in the Skin, to produce an *Evacuation*. There are many Places in the external Parts of the Body where this Operation may be perform'd; but the most common Place of making Issues is the Nape of the Neck, between the first and second *Vertebra*, where there is a notable Hollowness; and because this is done by drawing thro a Skain of Silk, therefore it is call'd by the particular Name of *Seton*: formerly in this Opera-

Operation there was used a great *Apparatus*, as may be seen in *Scultetus*, Tab. 7. and especially they pinched up the Skin with a Pair of perforated *Forceps*, thro which they passed a Needle with a Skain of coarse Silk, sometimes the Needle was run thro hot, and at other times cold, according to the Intention of the Physician. At present we forbear the Use of the perforated *Forceps*, and the hot Needle; but the Place being found, and mark'd with Ink, the Skin is to be pinched up by one hand of the Master, and another of the Servant's, till it is pierced with a strong Launcet, and afterwards a Skain of Silk or Thread is introduc'd by the means of a Probe, or the like: the Perforation is to be often anointed with some *digestive Medicine*, as is also the Silk, which must be moved to and fro every day. *Issues* are very often made also in the Limbs, in which we are oblig'd to chuse the Interstices of the Muscles, as well that the Pea may be more commodiously kept in, as also that we may have a more copious Efflux of Humour from the Vessels branching thereabouts.

bouts. In the Arm therefore, we make choice of that Space, which is between the *Deltoid* and *Biceps Muscles*, either that which is internal or external; also in the Thigh, that which is between the *Vastus internus* and *Gracilis Muscles*; in the Leg between the *Soleus* and *Gastrocnemius*: *Spigelius* also did use to make an Issue between the two Bellies of the *Musculus Gastrocnemius* and the same may be done between the two *Heads* of the *Biceps*. To perform this Work, we sometimes use an actual Cautery convey'd thro' a *Capsula*, to avoid terrifying timorous Patients: or sometimes we apply a Potential Cautery, and that is either liquid, or solid, being boiled to the Consistence of a Stone. In applying either of these, great care is to be had to the neighbouring Parts, by affixing a Piece of sticking *Emplaister*, with a small Hole in the middle of it, about the Bigness of the Place you intend to burn; where you may apply the Caustick, and afterwards a Compress and Bandage: but in making use of the liquid or dissolv'd Caustick, we shall better pre-

pre-

prevent its spreading to the adjacent Parts, by applying Lint twisted about in the Form Sailors quoil their Cables. This Artifice of making Issues by Cauteries, is calculated for those who are very timorous. The most certain and speedy way of performing this Operation, is by pinching up the Skin, and dividing it by Incision with a Launcet, and immediately fitting the Orifice with a Pea, which, by the affluent Humour, is swell'd, and thereby keeps the Place continually open; for, by this means, we are not perplex'd with Fears of the Caustick's spreading about, and so not doing its Business in Depth; nor do we lose a long time, as in waiting for a Separation of the *Escar*, before the Issue is made. From this being first a Wound, it becomes shortly a little Ulcer; and at length, the Sides growing callous, the irritated Part continually emits a thin Humour, flowing thro the Interstices of the Muscles, from the neighbouring Lymphatick Vessels. The only Art in this Business consists in finding the Interstice; but that is not difficult to any one moderately vers'd
in

in *Anatomy*: however, in fat Bodies it will be convenient to press your Finger upon the Space between the two Muscles, and oftentimes put the Member into an extended and flexed Posture: for if the Finger remains in the Cavity, and is not elevated by the subjacent Muscles, that is the Place to be mark'd with Ink, &c. Many things concerning these Matters may be seen in *Glandorpius's Gazophylacium*, or *Store-House of Issues*.

Of the Amputation of Limbs.

§. 34. AMONGST all the Operations in the Art of Surgery, there is not one makes so terrible an Appearance as the *Amputation of a Member*. This Operation is perform'd in a *Mortification* either of the soft or hard Parts of the Body, to prevent a further Infection of them, and thereby the Loss of Life. That Distemper, which is call'd by *Avicenna*, ¹ *Spina Ventosa*, is very often the Occasion of this Operation. Perhaps, says *Severinus* ², it had this Name bestow'd on it, because Ven-

Of a Spina Ventosa.

¹ Lib. 4. Fen. 4. Tract. 4. cap. 9.

² Lib. de Nov. Obs. Abscess. Part. 5. seu Pararthrocaces, cap. 1.

tosity amongst the *Arabians* is the same with *Oedema*, or Tumour; and it is term'd *Spina*, because in this case there is felt a continual Pain, like the pricking of a Thorn. He also thinks it to be ³ the same Distemper which the *Greeks* call *Τεχνόων*. The Noble *Tulpius* ⁴ believes it the same which *Celsus* ⁵ terms a *Cancer of the Bone*. But I cannot think so; because if we compare those things which he says ⁶ relating to a *Cancer* of the Mouth, also that ⁷ of the *Penis*, and likewise what he writes ⁸ concerning a *Cancer* of the Bladder; we shall find he means a *Gangrene*, which turns to a Mortification: and *Tagaultius* ⁹ is of the same Opinion with me. But what need we be solicitous concerning the Name, any further than to make the Matter rightly intelligible? says that most Antient Surgeon, *Petrus de Argell* ¹: “who describes the
 “ Generation of it to be a Collec-
 “ tion of Matter in the Substance
 “ of the Bone, proceeding from a

³ Cap. 14. ⁴ Lib. 4. Obs. 12.

⁵ Cap. 10. lib. 8. ⁶ Lib. 6. cap. 15.

⁷ Cap. 18. §. 3. ⁸ Lib. 7. cap. 27.

⁹ Lib. 4. Chir. cap. 3. ¹ Lib. 5. cap. 2.

“ Weak-

“ Weakness of the *assimilative Vir-*
 “ *tue:*” and I add from *Severinus* ²
 because “ the Matter is not concoct-
 “ ted nor expelled, but remaining
 “ there, elevates the Part into a Tu-
 “ mour.” Some curious Person per-
 haps will be inquisitive to know,
 why I should treat of this Distemper
 in a Place, which seems not altoge-
 ther proper for it; but I answer,
 because this Case does always require
 Amputation, and that about fifteen
 Months since, I saw *the most Illus-*
trious Lady Baroness of Merode infested
 with it; which, after various Judg-
 ments of Physicians, I immediately
 upon sight declared to be the same
 I had seen at *Naples*, in the Presence
 of the famous *M. A. Severinus*, which
 he has delineated in his Book so of-
 ten quoted ³. When therefore, ac-
 cording to the Advice of *Argellata*,
 the *Morbose* Bone could not be re-
 mov’d otherwise, it was necessary to
 have recourse to the last Remedy,
viz. the *Amputation* of the Leg. But
 I shall add an Account of the Bone,
 as it appear’d to us afterwards by

² Cap. 8. ³ Pag. 467.

Dissection: "The Skin being removed, which was very thin, we found the Tendons of the Muscles of the Leg, and also the great Tendon, which is fixed to the Heel, and naturally has a remarkable Thickness, as thin as Paper: The *Os Calcis* was the only Bone affected, which was so encreas'd in Magnitude, that it weigh'd one Pound and a half: it was not only porous, but those Pores were fill'd with a Cartilaginous Matter, like the Cartilage that covered the Bone, upon which was grown a callous Substance." In this Operation we are to be very circumspect in making choice of the Place to perform it in: Many Moderns are pleas'd to appoint the Place of Amputating in the very Joint it self, altho the contrary is observ'd in Practice, almost every where, as well from the Difficulty which occurs in the very Incision, because the Conjunction of the two Bones is not easily to be found, as also because a *Cicatrix* there is very slowly and difficultly procur'd. But since the Evil is not always near the Joint, but also about

about the end or middle of the Member, we are moreover to enquire whether or no the Operation is to be perform'd in the mortify'd or sound Part. Those who affirm the first (amongst whom is *Aquapendens*) do it upon account the Patient feels less Pain, and because there is in this Method no great *Hæmorrhage*, from which oftentimes follows a Loss of Life, and the Patient dies in the Operation. But this Advice is full of dangerous Hazard, because we are not certain the small Remains of the mortify'd Part we leave behind may not encrease again; besides, how shall we be able to know whether the subjacent Bone is corrupted higher, or not. Therefore it is more eligible to make Incision in the sound Flesh, about a Finger's Breadth from the Mortification. Yet still there is an Exception to this Rule in the Leg: for, if the *Sphacelus* be above the Ankle, it is to be taken off near the Knee, because what is left below it, affords no Use, but on the contrary, much Inconveniency in walking with a wooden Leg: moreover, by making Incision in the tendinous

Part

Part of the Muscles, the Consolidation of the Wound becomes far more difficult. But in the Arm you are always to observe the mention'd Rule, and leave as much of the Member as you can possibly. The *Instruments* necessary to this Operation are the large dismembring *Knife*, somewhat curved, the small *two-edged strait Knife*, the *Saw*, and sometimes, but rarely, the *excisory Forceps*. In the first place give the Patient a little *cordial Liquor*, lest he faint in the Operation; then the Skin and Flesh is to be drawn upwards, as much as can be, by some robust strong Man, that afterwards when it is loos'd, it may the better cover the naked Bone. This being done, a Ligature is to be fix'd immediately below the Knee, to keep the Flesh firm and steddly; and another above it, which must be straiten'd by the *Turn-stick*, or *Tourniquet*; underneath which, upon the crural Artery, is to be plac'd a thick Compress, and a small Piece of Paste-board, to hinder it from pinching the Skin, and being painful to the Patient: by the means of this Ligature, you may command the Blood, and let

let out as little or much of it as you judg convenient. Sometimes also, when a Mortification does not infect the inferior Part of the Leg, we fasten another Ligature beneath the Place of Incision, to prevent the Blood's flowing out of the *Veins*: for altho it does not hurt the Patient, yet the Quantity of it may terrify the By-standers. After these things being perform'd, the Surgeon takes his dismembring Knife, which ought to be less crooked than is commonly delineated in Authors, and cuts thro' at once the whole Musculous Flesh all around the Member, then scrapes off the *Periosteum* from the Bone, lest it be lacerated by the Saw; and also in the Legs and Arms, where there are two Bones, the little double-edged Knife is to be introduc'd between them, by an Assistant, as well that the *Periosteum* may be remov'd, as that the Vessels lying there may be divided: lastly, the Saw is to be apply'd, but it is to be first set upon that Bone, which is most liable to move from its Articulation; and therefore in the Leg you must begin with the *Fibula*, taking care to pre-serve:

serve the superior Appendage in its place, by fixing one hand thereabouts. The Amputation being perform'd, if a great *Hæmorrhage* of Blood should succeed, which but seldom happens, the Ligature may be so straiten'd, that not above three or four Ounces need be lost; some make use of an actual Cautery, to procure an *Eschar* upon the Vessels. But there is reason to fear a new Flux of Blood may ensue upon the Separation of it; and before the Surgeon can be call'd to stop it, the Patient may be dead. I shall say nothing of this Method, because *Parey* ¹ asserts, that cruel Pains and Convulsions are excited by it: wherefore he ² advises a *Deligation of the Vessels*, by taking them up with a *Volsella*, or convenient Pair of *Forceps*: but *Gourmelinus* justly condemns this Method ³, as we also reject with *Hildanus* the Method *Ambrose Parey* describes ⁴, of bringing the Edges of the Skin towards one another, by passing a Needle and Thread in three or four Pla-

¹ Lib. 12. cap. 35.

² Cap. 31, & 33.

³ Syntag. Art. Chir. p. 125.

⁴ Cap. 32.

ces,

ces, and thereby taking great care to cover the naked Bone, lest it should be injur'd by the Air. For, wherefore should we torment the Patient after this barbarous manner? when the Cure may be obtain'd much more happily, if we would bring into use that *Fungus* which is call'd *Crepituss Lupi*, or *Puff-Ball*; viz. by applying Pieces of it between the two Bones, fill'd with Stiptick Powders, and moisten'd with the White of Eggs; or we may form a sort of Buckler from a *Fungus* made hollow, and filled with some *Stegnotick Powder*, which we may apply to the Stump, and keep it there by the means of a defensative sticking Emplaister, apply'd in a crucial Form; over all which is to be put an Ox's Bladder, &c. until the Fear of an *Hemorrhage* is over. These things are to be continu'd whilst we think proper to use Digestives, prepar'd of Oil of *Whelps*, and so proceed to *cicatrize*. I shall add nothing here concerning *Botallus's* Method of Amputating, because I have inserted it in the Paragraph of *Aphæresis*. [Our Learned Author is pleas'd to prefer the Use of Stiptick

Stiptick Medicines, for restraining the Hemorrhage in this Operation, to any other Process, out of regard to the Patient's Ease; but I am well assur'd, from many Observations, that such a Ligation of the Vessels, as is mention'd above, creates no bad Symptoms, and perhaps excites less Pain, than the Application of those Stipticks which are effectual; and is undoubtedly the most certain, and therefore the constant and successful Practice of those Eminent Surgeons of St. Thomas's Hospital: altho I must declare, I have seen, four or five times, the Use of Vitriolick Applications succeed happily.]

§. 35. I CAN'T but be a little *Concerning* surpriz'd to find *Fabricius ab Aqua- Ustion of* *pendente*, who always condemn'd cruel *the Joints.* and painful Surgery, approve of *Ustion of the Joints*, which was very rarely practis'd in his time. But that *Neapolitan Surgeon, M. A. Severinus*, has restor'd this Method of curing; who in his Book *de Efficaci Medicina*, in that Part of it *de Pyrotechnia*, has not only prov'd its Usefulness by various Reasons, but also has shown, after what manner, according

cording to the different Matter which is made use of in the Operation, the same may be temper'd for Use. I remember I once formerly saw this sort of Ustion administer'd by *Severinus* himself, in his own House, exactly according to that Method which *Alpinus* deciphers¹, viz. by the means of Tow or Cotton made into a Pyramidal Form: but I don't remember how the Pyramid was formed, that the Fire might descend gradually, and at length, after the Part was injured to it, burn more vehemently. But something is to be added to the Tow or Cotton, so as the Fire being kindled in the Top, might encrease lower down by degrees; which Artifice *Alpinus* seems not to have known, or at least has not divulg'd it. Moreover, *Aquapendens* would persuade us to make use of the Wad of a Musket; but by this way the Success does not answer the Expectation. [*Perhaps if the Materials, whereof these Pyramids were made, be steeped in a Solution of Nitre in Aq. Commun. it would perform what our Author relates*

¹ Lib. 3. pag. 101.

² Lib. 4. cap. 22.

had seen done by Severinus.] Severinus calls this an *Arabian Burning*, because *Alpinus*, in the Place cited, not only attributes it to the *Egyptians*, but says it is much more familiar to the *Arabians*, who live in Tents. This kind of Cauterizing is chiefly in use in Pains of the Joints, arising from a cold glutinous Humour compacted there, as we may learn from *Hippocrates's* last *Aphorism* of the 4th Book, and also in *Celsus*¹. It is likewise in *Phlegmatick* Tumours generated in the *Superficies* of the Body, when the Matter is so obstinate as not to yield to any other Remedy: only one Instance of this is to be read in the Noble *Tulius*², of a certain Person whom he commanded to burn himself on the Hip with a hot Iron; from which afterwards, by a copious Efflux of Matter, he was freed of an *Ischiatick* Pain. Undoubtedly if here had been a Surgeon skilful of the *Arabian* manner of Burning, the Patient had suffered less Torment. *Hippocrates* ad-

Lib. 4. cap. 22.

² Lib. 3. Obs. 26.

vises the Use of raw Flax, *lib. d.*
affect. text. 30 & 32.

Of Tu-
 mours.

§. 36. TUMOURS which require Surgery, properly so call'd, are either those that come to Suppuration, and arise from Blood; or those which proceed from anomalous Matter, and cannot be brought to Maturation; or such whose Matter is contain'd in a *Cystis*, or Bag. In the first Case there is no Difficulty, only two Rules are to be observ'd: 1. That the Apertion of it be such as makes a Passage thro which all the contain'd Humour may flow out; for any remains that has not an Exit it will create Sinuosities in the neighbouring sound Parts. 2. We must have regard to the Course of the subjacent Muscular Fibres, and be very careful how we wound them; but in the Flexure of the greater Joints as in the Groin, Ham, or Arm, we are not to mind this Rule, because in these Places the Inconvenience would be greater, by the Motion of the Joints, which would bring the Lips of the Wound together, and thereby shut in the Matter: there

for

H 2

either

either pulpy, or like Honey, as in a *Meliceris* and *Atheroma*, is contain'd in a *Cystis*, the Skin being loose and free from any Connection with it: such a one I have seen in a young Woman, who had, about the bending of the Arm, a Tumour immediately under the Skin, in Hardness, Magnitude, and Figure, resembling a *Sheep's Heart*. The Cure is thus: the Skin is to be pinch'd up, and divided either in a simple, or cruciall Manner, viz. when the Tumour is large, and in a Place not very obvious to the Eye, then it being separated every where about by a broad *Spatula*, or the Handle of the Incision-Knife, until the whole *Cystis* appears, which, after tying the Vessels that nourish the Tumour, is to be cut out from the bottom. We are to be circumspect in this Operation, lest we wound the *Cystis*, for by so doing, the contain'd Matter not only flows out, but the Tumour will be regenerated, unless it can be consum'd by *Escharoticks*: yet oftentimes the Tumour is plac'd in such a narrow Compass, and the Pellicle so thin, that it comes asunder with the
least.

fast Touch. In this Case *Aquapen-*
ens advises to separate the new Cys-
 t by a broad Instrument, before it
 as join'd it self firmly to the Skin;
 or then we must have recourse to the
 Use of Medicines.

§. 37. BEFORE I conclude, I *Of Vena-*
 shall add something concerning that *section.*
 most common Operation in Surgery,
Venesection. : Altho this may seem to
 require little Care and Diligence, yet
 frequently happens, that it excites
 a small Pain to the Patient, nor
 Trouble to the Surgeon: for some-
 times the *Vein* does not appear at
 all, especially in fat Bodies, whose
Veins are not only small, but also
 wrapt up in Fat. In such a Case the
 Surgeon must chase the Arm with a
 warm Hand; then the Ligature is
 to be plac'd a little above the *Cubit,*
 or *Ankle,* and that not too strait, lest
 the Pulse of the *Artery* be intercep-
 ted; nor too loose, that the Blood
 may not return without swelling the
Vein: this being done, the Thumb is
 to be grasped within the Palm of the
 Hand, and compress'd there by the
 fingers, that, by the Tensity of the

Muscles, the Blood may be the better expell'd from them. Then the *Vein* is to be divided, which sometimes slips from under the Launcet; also sometimes when the *Vein* is cut, the Wound of the Skin, and that of the *Vein*, does not agree exactly. In the first Case there is reason to fear the Launcet may wound the *Nerve* or *Artery*, and in the second an *Ecchymosis* cannot be avoided: but either of these Inconveniencies may easily be prevented, as the Situation of the *Vein* may be remedy'd by adding another Ligature below the Place of Incision; so also, if the Surgeon elevates his Launcet when it is inserted in the *Vein*, he will divide the *Vein* and the Skin alike. The best Form of Incision is that of an *Oblique*; but where the Narrowness of the *Vein* does not admit of it, a *longitudinal* one may be substituted, but a *transverse* Incision is never to be made. The *Instruments* in this Operation are twofold; one sort is used in *Germany* and *Switzerland*, which being held in one hand, is to pierce the *Vein* by the means of a *Fillip* with the Fingers of the other: but it is evident, that

from

From this there is great Danger of wounding a *Nerve* or *Tendon*; for the other, which we call a *Launet*; and was invented by the *French* or *Spaniards*, is not without Danger, yet it is of common Use amongst us, when the former has not at all obtain'd. That *Venesection* may be rightly perform'd, it is convenient the Surgeon be *Ambidexter*; not only because the left Arm and Ankle require to have *Phlebotomy* perform'd by the left hand, but on account of other Business that often occurs. There are many *Veins* to be open'd according to the Advice of the Physician; the principal of which we shall enumerate. In the first place occurs the *Vena Frontis*, the Incision of which *Hippocrates* advises¹, and it is done by the same Method as those under the Tongue, viz. by twisting a Linen Towel round the Neck, gradually straiter, that the Return of the Blood may be hinder'd, or the *Veins* swell. In the Borders of the Head are the external jugular *Veins*,

¹ Aphor. 68. lib. 5.

which I remember to have seen open'd by *M. A. Severinus*. Nor is there occasion to fear opening these more than any other *Veins*, as may be seen in the Famous *Moreau's Epistle to Bartholine*: but it is necessary to use your utmost Endeavours to keep them firm, lest they slip away; and after they have bled sufficiently, they are to be closed as the *Veins* in the Arm. The *Veins* of the Arm are threefold; the *Cephalick* in the outward Part, the *Basilick* or *Liver-Vein*, and the *Median*, which is form'd from them both in the Bending of the Arm. Every common Surgeon knows this, but yet no one is open'd with greater Hazard of Danger, on account of the *Tendon* of the *Biceps Muscle* lying under it. The *Cephalick* is not properly so call'd, because it has a nearer Connection with the Head (tho *Vesalius* has endeavour'd to persuade us so', with whom you may compare *Highmore*²;) nor does the Apertion of it conduce more to remedy Diseases of the Head than any other.

¹ Tab. I. lib. 3.² Tab. 17.

This Scruple being remov'd, you will open that Vein which is most apparent and easy. In the Back of the Hand, *Veins* also may be open'd with great Benefit; partly because they are plainly to be seen, and without any Danger; and likewise by reason a great Quantity of Blood may be taken away without Fainting, upon account of the Vessels being small and capillary: which is the reason why the *Salvatella*, or *healthful Veins* are so call'd; altho this Name is given particularly to that *Vein* between the Ring and little Finger in the left Hand, according to *Jac. Carpus*¹. But we must lay aside these Mistakes of the *Arabians*, and believe with the *English*² *Hierophilus*, that amongst the neighbouring Veins, none deserve Preference, since they all receive promiscuously their Liquor from one common Artery; yet if the Surgeon should find a *Vein* that presents it self near the affected Part, he ought not to slight the Opening of it. What we have said concerning the

¹ Comment. in Anat. Mundini, p. m. 166.

² *Harvey*.

Veins of the Arm, is likewise to be understood the same in the *Veins* of the Feet, amongst which the *Saphena* is the only one in use; and this requires the Immersion of the Foot in warm Water.

Arterioto-
my.

BESIDES the Apertion of the *Veins*, the *Arteries* also may be open'd: but this Operation is not very common in our Country, altho it was practis'd by *Galen*, as is very plain from his Writings¹. *Prosperus Alpinus*, speaking of the *Aegyptians*, whose *Masculine* Surgery came from the *Greeks*, says, that they made use of this Remedy very happily: nor does *Fernelius*² omit declaring the Usefulness and Manner of performing it. Also you may consult *Severinus*³, and the Noble *Tulpius*⁴. But altho this Operation was known to the *Antients*, yet there were not many who dare undertake to perform

¹ Lib. 5. M. M. cap. 7. ut & lib. 13. cap. 22. ejusd. Oper.

² Lib. 2. M. M. cap. 18.

³ Efficac. Med. part. 2.

⁴ Obs. lib. 1. cap. 48.

it, as you may learn from *Heurnius's* Comment on the twenty third *Aphorism* of the first Book: for they always fear'd, that the *Arteries*, when divided, would not close again, or if they might happen to grow together, lest an *Aneurism* should be generated afterwards. But *Galen*¹ would persuade us to be easy in this Particular, because, tho it may be more difficult to close than a *Vein*, yet the Manner of performing the Operation is the same: and the chief Difference is, that it requires a straiter Bandage, and the Use of more powerful sticking Medicines; by which only the Noble *Tulpinus* says², an incipient *Aneurism* has been cured. The Manner of performing *Arteriotomy* is thus: The Hair being shaved off, the little *Arteries*, crossing the *Temporal Muscle*, are to be wash'd with a Sponge dipped in warm Water, and the Patient's Neck is to be bound with a Towel, his Head also is to be put into a declining Posture, that the tumefy'd *Arteries* may appear the

¹ Lib. 5. M. M. cap. 7.

² Lib. 4. cap. 16.

plainer; which are then to be pierced transversly, that the Blood may flow out freely. But if there should be reason to suspect a future *Aneurism*, you must cut them asunder, that the Ends being drawn under the Skin, and by being corrugated, the Flux of Blood may be stopped. With my Reader's leave, I shall add, in this place, something concerning the Nature and Cure of an *Aneurism*.

Of an *Aneurism*.

Truly I could never, as yet, conceive after what manner an *Aneurism* might be generated, by a Rupture of the internal and thick Coat of the *Artery*, and the *external* one remaining whole, notwithstanding it is much the thinnest, resembling a Cobweb; yet thus *Sennertus* is pleas'd to talk. But I must confess, I think this Distinction of the Coats to be entirely erroneous and false; altho I do acknowledge it may be generated from an external and internal Cause: the external Cause is a Wound of the *Artery* made by an imprudent Surgeon; for the *Artery* is only consolidated

on the Out-side, but not so strongly, as to guard off the impetuous Blood; which rushing into the weak Part of the Coat, elevates it into a Tumour. The internal Cause is an Aperture, or *Anastomosis* of little *Arteries*, from which the Blood flowing out into an Interstice of the *Muscles*, is coagulated into a *Thrombus*, which gradually encreases, and after a long Stay there, becomes of a fleshy Mass, not much unlike the *Muscles*, which is found hollow, and contains in the middle of it a black concreted Blood. I do not declare these things without Experience, it being acquir'd by dissecting this Distemper in *Venice* 1643. which *Case* I publish'd in the Year 1644. And I have lately seen this Experience confirm'd by the Famous *Bogdanus*'. The first Case may be cured by a Compression of the Tumour; but the second scarce ever admits of one, unless any one would compress the Artery, and then by dividing the Skin, take away the congeal'd Mass, and afterwards fill

Obs. Medic. 8. Subjunct. Cult. Anat. Lyseri.
the

the ruptur'd Artery with new Flesh;
by the Use of *Sarcotick Medicines*.

Of the In-
fusion of
Liquors.

§. 38. I HAVE been very particular upon *Venasection* for the Benefit of Evacuation; and I hope it will not be ungrateful to the Reader if I subjoin a few things concerning *Venasection*, that is perform'd for the sake of Repletion. This I understand to be the *Chirurgia Infusoria* of *Jo. Dan. Maj.* or the *Clysmatica nova* of *Elsholzins*, when any Liquor, either purging, cordial, or alterative, is injected into the Blood, by the means of a Syringe introduc'd into the Apertion of a *Vein*; which passing to the Heart, and afterwards into the *Arteries*, and so round the whole Body, produces the Effects of those Medicines in a much shorter time, than if they had been given by the Mouth. This Artifice has been since improv'd by *Transfusion* of the *arterious* Blood of a *Dog* into the *Veins* of another. Nay, the last Year's *Journal des Scavans* gives an account, that this Experiment was try'd upon two Men, into whose *Veins*, being emptied of a few Ounces, was transfused

fused the *arterious* Blood of a *Lamb*, from which time they had a better State of Health: nor is it strange, since instead of the bad Blood, that which was substituted, was pure and uncorrupted. Dr. *Tardy*, a Physician of *Paris*, proposes another sort of *Transfusion*, from one Man to another: but seeing it is not safe to open the greater *Arteries* in a human Body, he advises the Blood may be deriv'd from the *Vein* of one Man into that of another, by the means of a small *Tube*: as we have shown upon two *Dogs* in the Presence of many. I shall add nothing farther, because this *Chirurgical Operation* is new, and its Usefulness must be confirm'd by repeated Experiments.

SECTION the Second.

Part the Second.

§. 1. **W**E have now delivered Of Injections. Practical Examples of our particular *Chirurgick Method*, in those Operations which are *Curative of Diseases*; it is also equally expedient, that we give particular Examples

amples in those Diseases which are cured by the *Application of Medicaments*. For it is manifest, that there are many Distempers which are committed to the Care of Surgeons, cured chiefly by the Use of Medicines. We shall begin with *Artificial Medicines*, amongst which have been reckon'd, in the first place, those that are apply'd in the Form of an *Injection*. Altho to this may be reduced what is said in the next *Paragraph*, yet we shall here treat of *Clysters*, forasmuch as they are of the most ancient Origin; and they are such Medicines as are injected into the *Anus*, Variety of which, according to the Intention of the Physician, may be seen in *Sennertus's Institutions*. But because they are not injected by Surgeons, altho they more properly belong to them, than the Apothecaries, we shall say nothing of these, but proceed to give an Account of those which are common in use amongst Surgeons; viz. 1. *Injections for the Uterus*: and these are either

used to cleanse the Parts, as those made of the Juice of *Smallage*, a Decoction of the *Tops* of the *lesser Centaury*, *Leaves* of *Agrimony*, *Southernwood*, *Wormwood*, *Roots* of *Birthwort*, &c. Or Injections are made use of to consolidate; and these are prepar'd of the *Roots* of *Comfry*, *Bistort*, *Termen-til*, the *Leaves* of *Shepherds Purse*, *Plantain*, *Horse-tail*, *Millefoil*, *Mouse-ear*, &c. The Instrument is a *Syringe*, whose Extremity should be globose, and full of Holes, that it might pour the Liquor every where into a large Cavity. In the second place, we inject into the *Penis*; the occasion of which is very often a virulent *Gonorrhoea*: therefore to mitigate the Pain, we make Injection of warm *Milk*, *Rose-Water*, or that of *Mallows* and *Nightshade*, with *Troch. Alb. Rhas.* and a little *Sacch. Saturn.* Also *Bals. Peruv.* mundifies Ulcers very much; but in stubborn Ulcers of the *Prostate*, a little *Verdigreese* may be added: yet this might better succeed, if it were pour'd in by Drops thro a proper Funnel. Thirdly, in a *Sinuous Ulcer*, where *Ointments* cannot reach, *Spirit of Wine camphorated* may be injected,

injected, with the Juice of *Smallage*, *Celandine*, or with *Aloes*, *Myrrh*, *Verdigreese*, white *Vitriol*; with a Decoction of *Agrimony*, *Scordium*, *Flowers of St. John's Wort*, &c. Also *Bals. Peruv.* and *Sulph. Anifat.* are of great use in all these Cases.

Of Instillations.

§. 2. MEDICINES that are used as *Instillations*, either excite Warmth in the Parts, as those prepar'd for the Head, of *Sage*, *Rosemary-Flowers*, *Betony*, *Stæchas*, *Marjoram*, &c. or they are cooling, as these made from white *Poppy Heads* with their Seed, *Flowers of Violets*, and *Water-Lillies*, the *Leaves of Lettice*, *Nightshade*, &c. To promote Digestion in the Stomach, there may be Prescriptions, of *Crete Wine*, *Cinnamon*, *Cloves*, *Nutmegs*, *Mace*, *Calamus Aromatic*. *Leaves of Mint*, *Wormwood*, and *Red Roses*. But *Sulphureous Bath-Waters* are preferable to Decoctions; yet still because many Countries want these, we ought to prescribe such Medicines, as will best imitate the Strength and Virtues of natural ones.

§. 3. THOSE Medicines that are *Of Irriga-*
 administred in the form of *Irrigation* *tions.*
 or *Sprinkling*, are little different from
 the last ; for a Liquor is squeez'd
 out of a Sponge, then the Part is
 gently chafed, and at length the moi-
 sten'd Sponge is apply'd to the Part.
 So a liquid *Epithem*, if it is prepared
 for the Heart, should be compos'd
 of *Rose* and *Balm Water*, *Vinegar* of
Roses, and *Orange-Flower Water*. Some-
 times there are us'd Waters distill'd
 with *Orange* and *Citron Rind*, *Wood*
Aloes and *Saunders* ; sometimes also
 a little *Confection* of *Alchermes* and
Hyacinth are to be dissolved. For
 the Liver, *Decoctions* of *Red Roses*,
Plantain, *Endive*, *Red Saunders*, *Ba-*
laustines, and *Troches* of *Camphire*, are
 very convenient and useful. Here
 also belongs *Oxyrhodium*, which is a
 mixture of *Oil* of *Roses* and *Vine-*
gar.

§. 4. A FOMENTATION is *Of Fomen-*
 twofold, moist or dry: The moist *tations.*
 one is made of fresh or salt *Water*, or
Milk being warm ; or *Mint*, *Worm-*
wood, *Galengal*, and *Mace*, are to be
 decocted

decocted in Wine: yet the Simples are commodiously included in Linen Bags, and those being steep'd in the Liquor, are to be apply'd warm. Sometimes a Bladder is fill'd with the Decoction, and put upon the affected Part, and also Fomentations are made of live Animals cut thro in the middle, or only with Parts of them; as with the *Lungs, Caul, &c.* A dry Fomentation consists of Simples cut and breis'd, and inclos'd in a Bag. Thus for Affections of the Head or a cold Stomach, we prescribe Leaves of *Mint, Laurel, Red Roses, Cloves, Galengal, Calam. Aromat. Nutmegs, &c.* put into a Bag, which is to be sown in many Forms.

Of Baths.

§. 5. BATHS are of very common Use amongst the *Germans*, whose Country abounds with them; where also the *Balneators* are generally Surgeons. In private Houses they always prepare *Baths* themselves, which are the chief Cure of those Indispositions that arise from a Repletion of superfluous Humours, by deriving the Matter thro the Skin. But because this Book is designed chiefly for the

the Benefit of my own *Countrymen*, who are not provided with any natural Baths at all, we shall here set down some artificial Baths, so far as they belong to our present purpose, which are administred by Surgeons, for the easing of their Patients, and are to be prepared without difficulty. *Anodine* and *Emollient* Baths may be made of *Mallows*, *Marsh-Mallows*, *Mercury*, *Violets*, *Pellitory*, *Camomile*, *Linseed*, *Fenugreek*, *Poppy*, *Bran*, &c. If *Astringents* are required, we use *Leaves of Plantaine*, *Myrtils*, *Red-Rose Flowers*, *Balaustines*, *Bramble Buds*, *Sumach*, *Alum*. In a Stoppage of *Urine*, where the Patient is afflicted with the *Stone*, we usually mix, with *Emollients*, those things that are constituted of more subtle fine Parts; such are *Mugwort*, *Parsly*, *Nettles*, and *Lovage*. If you have occasion to *discuss* cold impacted Humours, you may succeed with *Southernwood*, *Wormwood*, *Ground-Pine*, *Calamint*, *Origanium*, *Savory*, *Thyme*, *Saven*, *Hys-top*, *Marjoram*, *Hore-Hound*, *Laurel*, *Seeds of Carrot*, *Bishopsweed*, and *Fennel*; sometimes also we add *Nitre*, *Sulphur*, and the *Ashes of the Vine-tree*.

tree. These Simples are to be decocted in a large Kettle, and afterwards the Liquor is to be poured into a *Bathing-Tub*; where, Universals being premis'd, the Patient is to sit up to the Navel; or if the Malady is higher, the whole Body is to be immersed. Unless we had rather make use of the Invention of *Sanctorius*¹, which is, that the Sick be inclos'd in a Leather *Bag* containing Water, and shut about the Neck of it; on whom Water, impregnated with the virtue of the Simples, is to be poured from aloft, which runs out again into a *Vessel* underneath, by the means of a *Pipe*. For by this Method the Patient, who has not strength enough to rise without fainting, may have the benefit of a Bath, without rising from his Bed. Surgeons, to whom the Cure of the *Lues Venerea* is generally committed, put their Patients into a Sweating, either by the means of hot *Bricks* wrapp'd in course Paper; or they place them in a *Tub* or wooden Vessel.

¹ Comment. in Prim. Fen. pag. 405.

fel, where they sit with their Heads just above it; or in a flat-roof'd *Cottage*, woven about with Lettice-work, and cover'd every where with Paper, that there may be no Passage for the Air: or they sometimes lay their Patients in a supine Posture upon a *Machine*, whose bottom is form'd of broad Bands, and above their Bodies are display'd three or four wooden Hoops, upon which are to be put many Clothes; but underneath is to be plac'd a little *Vessel* fill'd with burning Coals, or kindled *Spirit of Wine*: so that by this means the Pores of the Skin are open'd, and the Humours sweat out, which are to be wiped away by Linen Clothes. You may see the Figures in *Severinus* ². I have invented, according to the Example of *Sanctorius*, another Instrument for this purpose, *viz.* a Pair of *Bellows*, having a long Pipe; and in the middle of it must be a burning hot *Ball*, thro which the Air becomes hot, and is to be transmitted to the Patient, lying in his Bed loose-

ly, but inclosed every way in Linen; and he is thereby provoked to sweat very much, without any danger of fainting.

Of Suffu-
migation,
&c.

§. 6. A FUMIGATION and Vapour differ only in respect to the Matter of them, being dry or moist. Also sometimes certain *Minerals*, being dry, are to be put upon the Fire, which otherwise, by being boil'd in Water, could not communicate their Virtues to the affected Part. A Fumigation is us'd to bring down Womens *Menstrua*, according to *Hippocrates*³, which is chiefly made of *Myrrh*; but we add *Affasætida*, *Galbanum*, *Sagapenum*, and *Amber*. And to corroborate and dry a pituitous Womb, we use *Calamus Aromaticus*, *Costus*, *Cypress*, *Lovage*, *Leaves of Sage*, *Penny-royal*, *Feverfew*, *Citron* and *Orange Rind*, &c. The manner of performing a Suffumigation of the *Uterus*, is describ'd by *Hippocrates*⁴, viz. by putting the Patient into a *Basket*, and then to transmit the Va-

³ Lib. 5. Aphor. 28.

⁴ Lib. 1. de Morb. Mul. Text. 26.

pour thro a *Reed*, having one end of a leaden *Pipe* inserted into it, and the other put into the internal *Mouth* of the Womb. Another Cause of *Fumigation* is a *venereal Ulcer*, especially if it infests the Womb or *Anus*; for then a little *Cinnabar* is to be mix'd with *Myrrh*, *Frankincense*, *Ladanum*, and *Benjamin*; after which the Patient is to sit upon a perforated *Stool*, and by closing all the Passages to keep in the Fume, to receive the Vapour. There is an Instance of *Suffumigation* in *Aquapendens*^s, viz. That the Patient, whose *Hemorrhoid Veins* are open'd by a *Lancet*, or *Leeches*, should sit upon a Tub of hot Water, where there is a *Cup* to receive the Blood flowing from the open'd Vessels, by the means of the hot ascending Steams of the Water. *Ambr. Parey*^o also has another Example of this sort of Remedy, for the Cure of callous and inveterate *Cancuncles* in the urinary Passage, viz. by putting little Pieces of Mill-stone, endred burning hot, into a proper

^s Lib. de Oper. Chir. Tit. de Hæmor.

^o Lib. 19. cap. 25.

Place, where the Patient may receive the Vapour which arises from equal Parts of *Aqua-Vitæ* and *Vinegar* being sprinkled upon them.

Of *Unction*

§. UNCTION being not at all artful, the Dexterity of the Surgeon is never desir'd: however, we may recount those Affections to which *Unction* is apply'd; for altho it may be doubted whether or no it produces any Relief, yet we had rather comply with Custom. In the meantime, adjudging the Cause of their Effects to arise from our Bodies being porous, and receiving from them some subtle *Particles* within the Skin, subjacent Parts, and Vessels, where the Blood being alter'd, conveys, by its Circulation, its acquir'd Qualities all over the Body: hence the famous *Major* commends this Practice in a peculiar Book on this Subject, of anointing the Crown of the Head for curing other Diseases besides those of that Part. *Unction* is perform'd promiscuously, by *Oils*, *Liniments*, and *Ointments*: so oftentimes we apply to a Part inflam'd the white of *Eggs*, mix'd with *Oil of Roses*; sometimes

times also we apply *Oleum Rosarum Omphacinum* with a little *Wax*, and *Ungt. Alb. Camphoratum*; but the best Liniment is prepared of *Oil of Roses*, with *Vinegar* and *Litharge*. *Oil of Camomile*, *Keirin*, *white Lillies*, *Earthworms*, and *Palm Oil*, with *Ointment of Marsh-Mallows*, and *de Ranis*, together with the *Fat of a Hen*, *Ox*, or *Hog*, resolve and mollify the Parts; also *Ungt. Diapomphol.* and *Populeon*, with a little *Saccharum Saturni*, egregiously cool. We anoint *Gunshot Wounds* with *Oil of Turnips*; also a *Liniment* is prepar'd of *Rain-Water* with *Spanish Soap* against an *Erysipelas*. Here also is to be noted the *Aq. divin.* of *Fernelius*, against *malignant* and *venereal Ulcers*, prepar'd of *Sublimate*, gr. xii. and *Plantain Water* $\frac{3}{4}$ vi. but this is to be apply'd with judgment. Against a filthy *Scab*, *Ungt. Alb. Camph.* with a little *white Precipitate* and *Oil of Tartar per Deliq.* prevails. But, lastly, to stop a *Gangrene*, or a pestilential *Carbuncle*, *Butter of Antimony* is very beneficial, by anointing the sound as well as the affected Parts.

Of Pow-
ders.

§. 8. THE *Powders* which Sur-
geons use, are various; but their Vir-
tues are chiefly to dry up superfluous
Humidity, and take away spongy
luxuriant Flesh. *Astringent Powders*,
to stop a Flux of Blood, are prepar'd
of *Meal-Flower*, *Dragon's-Blood*, *Frankincense*, *Terra Sigillata*, *Gypsum*,
Burnt Sponge, *Chalk*, *Lapis Hematitidis*,
Aloes, the *Bone of the Cuttle-Fish*,
Sarcocolla, *Puff Balls*, *Roots of Corn-
fry*, *Bistort*, *Cinquefoil*, white *Vitriol*,
red *Coral*, and *Gum Tragacanth*. *Cath-
eretic Powders* are made of *Burnt
Allum*, *Frankincense*, *Myrrh*, and *Ver-
digreese*; and sometimes we add the
Powder of Rhodium Wood. For car-
rious and naked Bones, we make use
of the *Roots of Birthwort*, *Orrice*,
Hog's-Fennel, *Aloes*, *Myrrh*, *Euphor-
bium*, calcined *Pumice-stone*, and *Harts-
horn*, &c.

Of Suppo-
sitories.

§. 9. SUPPOSITORIES are
prepar'd by the Apothecaries, and
generally administred by them: But
we do not intend to treat of those
Suppositories, which are given to ren-
der the Belly soluble; but of such as
are

re apply'd to the bottom of sinuous Ulcers, after they are boil'd to the Consistence of Suppositories. Thus the Juice of *Celandine* is form'd into suppositories; also they are made from a Decoction of *Agrimony*, *Scorpium*, *Flowers of St. John's Wort*, with thick *Honey*, and sprinkled with Powders of *Frankincense*, *Mastick*, *Myrrh*, *Sarcocolla*, and white *Vitriol*, very useful against internal Ulcers of the *Anus*. Here also may be reckon'd those medicinal *Candles* to be put into the *Penis*, for the Cure of *Caruncles* in the urinary Passage; which may be form'd of an *Amalgama* of *Mercury*, with *Ungt. Diapomphol.* and by the means of a *Wax-Candle*, on which it is to be anointed, you may so apply them to the *Caruncles*, as to avoid hurting the sound Parts. When this Malady is obstinate, I would advise you to consult *Riverius in Obs.* 12. c. 2. and *Borelius in Obs.* 79. c. 1. or the Explanation of *Tab. xl. of Scultetus*, where you may find many things to your purpose.

Of Em-
plaisters.

§. 10. EMPLAISTERS are so generally the Instruments of a Surgeon, that scarce any thing is done without them. The *Emplaister* that first occurs is the *Defensative*, made of the *white of Eggs*, *Bole*, *Dragons Blood*, and *Frankincense*. Then the *Emplaister of Fernelius ad Herniam*, or another prepared of the *Root of greater Comfry*, *Cypress Nuts*, *Flowers of Balaustines*, *Red Roses*, *Oak Leaves*, *Dragons Blood*, *Acacia*, *Mummy*, *Pitch*, and *Colophonia*. *Empl. Diachylon* and *Oxycroceum*, are commended in an *Oedema*. Sometimes, for a more powerful Medicine, we use the *Root of Pellitory*, *Sulphur*, *Nitre*, the *Ashes of the Vine*, the *Dung of Cows*, *Goats*, and *Pigeons*; also *Empl. de Ranis cum Mercurio* is useful in the like Case. *Empl. de Cumino* is very serviceable in Diseases of the Head, *ventose Tumours*, and in all those Parts where a Concoction of Matter is requir'd: A Description is thus extant in *Vigo*; R̄ *Ol. Aneth.* ℥ i. *Ol. Absynth.* Myrtin. *Succi Rha-*
phan. ā ℥ iii. *Cumin. trit.* ℥ i. *Vini*
Odorat. ℥ i. let them boil to the
Con-

Consumption of the *Wine*, then strain
 t, and with a sufficient Quantity of
Wax boil it to an *Emplaister*. To in-
 duce a *Cicatrix*, *Empl. Gryseum*, *Lapid.*
Caliminar. & *de Tutia*, are very use-
 ful. In *venenate* Wounds we use an
Emplaister prepared of boil'd Onions,
Venice-Treacle, *Goats Dung*, the Root of
Angelica, with *Honey* and *Wax*: But
 to bring a *venomous* Wound to Sup-
 puration, there is to be added, *Gum*
Galbanum, *Sagapenum*, *Oppoponax*,
Myrrh, *Pigeons Dung*, *Mummy*, Pow-
 der of *Comfry Root*, with as much as
 is sufficient of *Oil of St. John's Wort*.
 Also here belongs what are call'd
Dropaces, to pluck away the corrup-
 ted Roots of Hair; they may be
 form'd of *Pitch* and *Oil*, and some of
 the Hair being cut off, they are to
 be apply'd warm to the Part, and
 very often pluck'd off again; they
 are also conducive to remedy an *A-*
trophy in any of the Limbs. *Vesicato-*
ries must likewise be mention'd here,
 and they are made of the Powder of
Cantharides, with any sour *Ferment*,
 and a little *Vinegar*. Concerning *Cau-*
sticks, we have treated in the second
 Part of the first Section, and in §. 33.

of the first Part of the second Section. We must also add in this place, Medicines that are term'd *Psilothra*, very much in use amongst the *Turks*, and are prepar'd of *Rusma* and *unslack'd Lime*; concerning which read *Bellonius's Observ. lib. 3. c. 33.* they only leave the Skin naked and free from Hair.



The CONCLUSION.

§. 1. **A** MULTITUDE of Books, says *Seneca*¹, confounds the Mind; and therefore since we cannot read all, it is sufficient to select the choicest. That the Student in Surgery may not be ignorant of these, I thought it would not be improper to give my Opinion of the Writers in this Art, and at the same time to recommend those from whom the greatest Benefit may be re-

¹ Epist. 2.

ceiv'd: for as a weak Stomach covets Varieties, which rather corrupt than nourish; so the reading of abundance of Authors, and those of different sorts, has something in it vague and indetermin'd. Altho I am far from persuading any one to commence Surgeon from reading only, but would rather advise the diligent Observance of *Practice*, and from thence, with judgment, the forming of *Precepts* to act by; yet I would not have any despise and neglect the Improvement they may acquire from those silent Instructors, Books. Besides those Authors whom I commended in §. 4. of the Introduction, and which I advise may be always at hand; such occur first as have attempted to deliver a *Methodical System of Chirurgery*; and amongst them the chief Place is due to *Hippolitus Parma*, who wrote an *Introduction to Chirurgery*, printed at *Padua*, 1612. This Author seems to have been endow'd with a *Genius* superiour to the rest of this Tribe of Writers, who, mistaking the real Nature of Surgery, fancy'd it to consist

fist only in the *Application of Medicines*, as may be seen by *Mercatus*, in his *Institut. Chir.* from whom *Parma* seems to have compil'd his *Work*, (altho there is in it frequently mention made of *manual Operation*) because he follows the same Method in ranging his *Materials*. In the same *Class* with *Mercatus*, are to be ranked all those Writers, who confine Surgery to five sorts of Distempers, viz. *Tumours, Wounds, Ulcers, Fractures, and Dislocations*: such are *Sebastian Cortilio, Stephen Calandar, Francis Peccettius, Peter Pigræus, Vesalius* in his *Chirurgia magna*, which *Treatise* is no way worthy of its Author; and *Marcus Aurelius Severinus*, in his *Synopsis Chirurgica*, which is lately publish'd under his name at *Amsterdam*, tho I dare to swear it was never wrote by that learned Person: The *Chirurgery of Riolan the Father*, and also the second and third Books of the *Sylva Chirurgiæ* of *Gabriel Ferrara*: To this Tribe also may be added the *Enchiridion Chirurgicum* of *Chalmet*; and *Saporta*, who wrote professedly of *Tumours*, brings up
 the

the Rear. *Jo. Bapt. Cortesius* took a more prudent Course, who tho he did not depart from the usual *Method*, yet subjoin'd under each Head, by way of *Appendix*, the manner of performing the *manual Operations*; and if he was not too lax in his *Theory*, would be useful to Beginners.

§. 2. BUT as it is not sufficient to point out to Mariners the Shelves and Rocks, without directing them how to arrive at their desir'd Haven, so now we shall set down the more eminent *Writers*. And since amongst these all do not equally please every body, we shall mention the greater number, that the Reader may chuse those that are to his Taste: for if we would have any thing make a lasting Impression on our Minds, we should take care to accustom our selves to such *Writers* as have the same turn of Thought. The universal Consent of the Learned yields the first Place to *Hippocrates*, whose *Writings* declare, that he not only understood, but constantly practis'd this *Art*.
After

An Introduction

After the *Greek*, I shall add the *Latin* *Hippocrates*, *Celsus*; he was excellent in this *Art*, and has deliver'd its *Precepts* in the politest Language. I am not ignorant, that some have imagin'd he never practis'd, but only interpreted and transcrib'd *Hippocrates*; but I cannot entertain such Sentiments concerning him: for if it had been so, it was impossible for him to write so well in the seventh and eighth Books, insomuch that he merits never to be out of the hands of those who design for the Medical Art. Next to *Celsus*, tho not comparable to him, is *Paulus Aegineta*, who, to avoid Confusion, treats in his *fourth Book* of *Ulcers* and *Apostems*, so far as they require *Medicines*; but in his *sixth Book* handles them, as falling under *manual Operation*.

§. 3. A F T E R these *Authors*, another sort of *Surgery* was introduc'd by the *Arabians*. The chief and principal thereof (excepting *Albucaasis*, who liv'd about 1085, and deliver'd a *Masculine Surgery*, and especially that which is perform'd by cauteriz-
ing,

ing, and which is now in frequent use amongst the *Arabians*) was the famous *Guido Cauliacensis*, whom *Fallopious* scruples not to equal with *Hippocrates*, by reason perhaps, that as *Hippocrates* was the Restorer of the Medical Art, and whom all afterwards endeavour'd to imitate; so amongst the Surgeons, *Guido*, as amongst the Anatomists, *Berengarius*, was the first who recover'd this Art from Obscurity, and whose Steps others have follow'd, tho not with equal Success: therefore of *Guido* the candid *Fallopious* says, after *Hippocrates* and *Galen*, he surpass'd all the *Greek*, *Latin*, and *Barbarous Writers*, but especially at that time, when Physick was at so low an Ebb, having added many useful and learned Things of his own. He lived about the Year 1363. We ought to excuse this Author, considering the *Age* he lived in, if whilst he endeavour'd to write a new and peculiar *Method of Surgery*, he did not separate the *Operative Part* from that which treated of *Medicines*. *Tagaultius* only made this Author speak more elegant Latin, who

who lived about 1554. for tho he amended the Words, you will find the Matter to be *Guido's*. *Joannes de Vigo* concludes the Account of Barbarous Writers. *Marianus Sanctus Barolitanus* was *Vigo's* Scholar, and afterwards publish'd a *Compendium of Surgery*. The next that occur in order are *Brunus*, *Theodorick*, *Roland*, *Lanfranck*, *Bertapalia*, *Rogerus*, and *Gulielmus à Saliceto Placentinus*, who tho reckon'd last, yet for his Worth deserves the first Place: all which were publish'd together by *Juntas* at *Venice* in the Year 1546. Nor ought we to forget *Petrus de Argillata*, who wrote about the Year 1490. But before all these, was *Constantinus Africanus*, who lived in 1080. and hath inserted in his *Works* the *Chirurgick Cures* of a few *Distempers*. I shall not say much of *Dinus de Garbo* and *Bernh. Gordonius*; for they are to be ranged with those at the end of the first *Paragraph*.

§. 4. WE come now to the *Writers* of the past and present Age, and shall first take notice of those who have

have deliver'd to us a *System* of this *Art*. Amongst these, *Gabriel Fallopius* has the first Place, who has follow'd the Example of *Guido*; and it were to be wish'd the Volume that appear'd under his Name at *Venice* in 1606. had receiv'd his finishing Hand; then scarce any thing would have been wanting: for he handles every thing so candidly, judiciously, nervously, and accurately, that it plainly appears, he was equally skilful in *Chirurgery* and *Anatomy*. After him succeeds the famous *Ambrose Parey*, that most skilful Surgeon to the *French Kings*, who, instructed by a long Series of Practice, much improv'd this Art: but that vast Volume, which goes under his Name, was composed by the *Doctors* of *Paris*, whom *Parey* furnish'd with a great number of *Cases*; and to make the Work large, they adjoin'd many *Things* foreign and superfluous to a Book of *Surgery*. This Experienced Man had better consulted his Fame, if he had publish'd his Observations and particular Cures by themselves, with the Remedies he had approv'd by long Use,
and

and the Practice of many Years: as did, to his great Glory, *Gulielmus Fabritius Hildanus*, the Ornament of Germany, whose Name will be mention'd by latest Posterity: for, as *Seneca* says, *the way by Precepts is long and tedious; by Examples, short and easy*: so every one experiences what a lively Impression particular Observations make upon the Mind, wherein the Case too often appears otherwise, than what is describ'd by Systematick Writers, insomuch that he who is instructed by Books only, will often be at a loss; whereas Observations will teach the Effects of the Medicines from day to day, the supervening Symptoms, and, at length, the Event, whether happy or fatal: besides which, if the Part affected could be examin'd after Death, that is prevented frequently by the perverse Superstition of the Relations, there would be little wanting, but we might obtain a compleat Knowledge of Distempers. I will add yet further, that I dislike the pompous Stile, and impertinent Prefaces which abound in *Hildanus*; I have therefore
some

some Thoughts to abridg him of those Preambles, and reduce the Cases under proper Heads.

§. 5. AMONGST *Chirurgick Writers*, there is no one so deservedly Eminent as *Hieronimus Fabritius ab Aquapendente*; who, in his Book of *Chirurgical Operations*, delivers, according to the Example of *Celsus*, the *Manual Cure* of Distempers, in the same Order as the Parts retain in a human *Body*; insomuch that he professes himself an Interpreter of *Celsus*, and every where endeavours to illustrate him. The next Place, on account of his Merit, is due to *Johannes Fessenius a Fessen*, worthy of a better Fate; who, in his *Chirurgical Institutions*, delivers the *Manual Operations* with great Perspicuity and Elegance, always forbearing the mention of *Medicines*, unless where Necessity obliges him to it. *Stephen Gourmeline*, and *Vidus Vidius Jun.* were both employ'd in devising a new *Method*, whereby *Surgery* might be treated of separately from other Parts of *Medicine*; and their
Endea-

Endeavours deserve our Commendation, inasmuch as they durst venture to forsake the old Path, to explore a new one more plain and useful; wherein their Successors might follow with greater Facility. *Chirurgery* ought not to be clogged with that *Farrago* of Medicines, which vulgar Books are stuffed with; for it is most true, that Nature is content with a little, and that she alone effects the Cure: insomuch that it is only requir'd of the Artist, to watch an Occasion, and opportunely to lend her a helping hand. He, who expects to acquire Reputation in remedying Distempers of a human Body, by the Art of Surgery, must attend eminent Artists, whilst they are performing Operations; that thereby he may be able to imitate them. Nor will it be amiss for any one, before he undertakes this Operative Business, to inspect the elegant Figures of *Scultetus*, whose Explanations will inform him of the several Methods made use of by others, which he may abbreviate as he sees occasion; so that the Shortness of Life may
in

in some measure be compensated by the Brevity of Art.

§. 6. TO crown all, we shall adjoin the most approv'd of such Authors as have handled some particular Branch of this *Art* in a distinct Treatise. *Ingrassias*, no unlearned Person, has wrote of *Tumours*; but he is very prolix in reconciling the *Greek* and *Arabick* Names, and obscures the Matter by his many Divisions. *Jul. Cas. Arantius*, and *Marcus Aurel. Severinus*, deserve Commendation on all accounts: it was the latter of these who left us that profound Book, *de Abscondita Abscessuum Natura*, built upon the Experience of many Years; as likewise that extraordinary Piece, *de Medicina Efficaci*. That we enjoy that Excellent Treatise, *de Fractura Cranii*, of that Antient Writer *Berengarius*, is owing to the Famous *Conringius*. But because in so noble a Part too much Diligence cannot be blamed, you may consult the Treatises of *Jo. Bapt. Carcanus Leo*, *Andrew Alcasar*, a *Spaniard*, and *Lewis Queirats*, a late *French*

French Author. There are almost an infinite Number, who have commented upon *Hippocrates de Vulneribus Capitis*; as *Arantius*, *Parma*, and, whom I durst compare, and even prefer to the rest, our Countryman *Peter Paw*. *Guillemeau* has wrote of the *Diseases of the Eyes*, but the *Chirurgick Cure* of them is owing to *Durants Scacch*, and *Peter Franco*, who have both wrote also accurately of *Lithotomy*, altho the first Writer thereof was *Marianus Sanctus Barolitanus*; but the most accurate of all is *Hildanus*, in a peculiar Tract on that Subject. *Taliacotius* is the only one who has talked of restoring lost Members by *Insition*. Of *Ruptures* we have *Franco*, *Scacch*, and *Geigerus*. Of *Wounds*, besides *Alcasar* and others, the Famous *Matthias Glandorpius* has treated of them professedly in his *Speculum Chirurgorum*. *Magatus* also, in a distinct Treatise, has recommended the seldom dressing of Wounds. Concerning the Prognosticks of Wounds, *Bernard Suevus*, *Melchior Sebizius*, and *Hieron. Welschius* have wrote; and to these may be added *Fortunatus Fidelis*, in his

his Treatise *de Relationibus Medicorum*: for the Physician cannot have this Affair too much at heart, because, on his Report, frequently depend the Determinations of Justice. Tho many have wrote of *Gunshot-Wounds*, yet those are chiefly to be depended upon, who were concern'd in *Camps*; as *Parey*, *Botallus*, and *Guillemeau*. As particular Observations, faithfully related, are of great Use and Advantage, so those, who in describing them, thro I know not what Malice or Envy, conceal their *Remedies*, deserve to be had in the utmost Detestation: and amongst these, *Gulielmus Lofellus* is to be distinguish'd. But, on the contrary, *Riverius*, *Borellus*, *Barbette*, *Scultetus*, and others, who have candidly communicated their *Secrets*, merit the highest Veneration.

§. 7. YOU have here, Courteous Readers, such *Authors* as I esteem, prefer, and acknowledg my self much oblig'd to. I am persuaded, there is not one, in the whole List, ought to be wanting in your Closets; for, if
they

they are perused leisurely, and with Judgment, they will all of them serve to prepare you for *Practice*. I congratulate my self to have thus pointed out the *Road* to you, it will be your Part diligently to follow it, and, if you shall make any Discoveries, candidly to communicate them for the Benefit of others.

F I N I S.



*BOOKS lately printed for T. Varnam
and J. Osborn at the Oxford-Arms
in Lombard-street.*

THE *French Inquisition*, or the History of the Bastile in *Paris*, the State-Prison in *France*; in which is an Account of the Manner of apprehending Persons sent thither, and of the barbarous Usage they meet with there. Also an Account of the leud Lives and strange Adventures of several Prisoners, but more particularly of some Priests. Written by *Constantine Renneville*, who was a Prisoner there 11 Years.

The Curse of Popery and Popish Princes to the Civil Government and Protestant Church of *England*. With an Introduction, shewing the Progress of Popery from the Reformation to this present time.

The History of the Reign of *K. Charles I.* Containing a more particular and impartial Account of the Rebellion and Civil Wars, than has yet been publish'd. Collected from private Memoirs, and authentick Papers; and compar'd with *Clarendon*, *Rushworth*, &c. Written in *French* by *Monsieur de Larrey*, Counsellor of the Court and Embassies, and Historiographer to the King of *Prussia*. In 2 Volumes, 8vo.

The History of the Wars of his present Majesty *Charles XII.* King of *Sweden*, from his first Landing in *Denmark*, to his Return from *Turkey* to *Pomerania*. By a *Scots Gentleman* in the *Swedish Service*.

The Life and Posthumous Works of *Arthur Maynwaring*, Esq; Containing several Original Pieces and Translations, in Prose and Verse, never before printed. To which are added, several Political Tracts, written by him before and after the Change of the Late Ministry.

*BOOKS printed for John Darby in
Bartholomew-Close.*

A Directory Physico-Medical, compos'd for the Use and Benefit of all such as design to study and practise the Art of Physick. Wherein proper Methods and Rules are prescrib'd for the better understanding of that Art; and Catalogues of such Authors exhibited, as are necessary to be consulted by all young Students. By *Peter Paxton, M. D.*

Pyrotechnical Discourses. Being, I. An Experimental Confirmation of Chymical Philosophy, treating of the several Principles in the Animal, Vegetable, and Mineral Kingdoms. With a Perspective against Chymical Non-entities. Written by *John Kunkel*, Chymist to the Elector of Saxony. II. A short Discourse on the Original of Metallick Veins; by *George Ernest Stahl, M. D.* which may serve as an Answer to *Dr. Woodward's Theory of the Earth*, and was a Forerunner to. III. The Grounds of Pyrotechnical Metallurgy, and Metallick Essaying; by *John Christian Fritschius of Schwartzburg*. Translated from the Latin.

An Apology for the Bath. Being an Answer to a late Enquiry *into the right Use and Abuses of the Baths in England*, so far as may concern the hot Waters of the Bath in the County of Somerset. With some Reflections on Fresh Cold-Bathing, Bathing in Sea-Water, and Dipping in Baptism. In a Letter to a Friend. By *Thomas Guidott, M. D.*

A Practical Dissertation on Bath-Waters. Treating of the Antiquity of Bathing. Of the Original of Springs. Of the Cause of the Heat of Bath-Waters, and of their Ingredients. Of Drinking Bath-Waters. Of Bathing. Of the City of Bath, its Situation, Baths, &c. Design'd for the Use of the Nobility, Gentry, &c. who resort to the Bath. By *W. Oliver, M. D.*

Posterior, & the Breech

